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MEDICO-CHIRURGICAL TRANSACTIONS,

PUBLISHED BY THE

ROYAL

MEDICAL AND CHIRURGICAL SOCIETY

OF

LONDON.

VOLUME THE TWENTY-FOURTH.

LONDON:

PRINTED FOR LONGMAN, ORME, BROWN, GREEN, AND LONGMANS, PATERNOSTER-ROW.

1841.

PRINTED BY RICHARD KINDER, GREEN ARBOUR COURT, OLD BAILEY.

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GREEN ARBOUR COURT, OLD BAILEY.

ROYAL
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OF LONDON.

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OF THE

ROYAL
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OF LONDON.

JULY 1841.

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1822 Samuel Ashwell, M.D., *Obstetric Physician and Lecturer to Guy's Hospital;* 16, *Grafton-street.*

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1833 Alfred Barker, M.D., *Physician to St. Thomas's Hospital;* 15, *Grafton-street, Bond-street.*

ELECTED

1823 *Edward Barlow, M.D., *Physician to the United Hospital, and to the Bath Hospital; Bath.*

1815 *John Baron, M.D., *Cheltenham.*

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1824 John Burne, M.D., *Physician to the Westminster Hospital, and to the Magdalen Hospital*; 24, *Lower Brook-street.*

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1825 Harry Carter, M.D., *Physician to the Kent and Canterbury Hospital; Canterbury.*

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1812 Thomas Copeland, Esq., F.R.S., 4, *Golden-square.*

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1820 Thomas Davis, Esq., *Brook-street, Hanover-square.*

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1835 William England, M.D., *Wisbech.*

1815 G. F. D. Evans, M.D., *Physician to the Westminster General Dispensary;* 21, *Hill-street, Berkeley-square.*

ELECTED

1836 George F. Evans, M.B., *Physician to the Birmingham Hospital.*

1841 Sir James Eyre, M.D., 11, *Brook-street, Grosvenor-square.*

1841 Alexander Farquhar, Esq., *Albemarle-street.*

1831 Robert Ferguson, M.D., *Physician-Accoucheur to the Queen; Professor of Midwifery in King's College, London; Physician to the Westminster Lying-in Hospital; Queen-street, May Fair.*

1814 William Fergusson, M.D., *Inspector of Hospitals; Windsor.*

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1817 James Forbes, M.D., *Deputy-Inspector of Hospitals.*

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ELECTED

1818 James Alexander Gordon, M.D., F.R.S., *Physician to the London Hospital;* 2, *Finsbury-square.*

1825 Robert Graham, M.D., F.R.S. Ed., *Professor of Botany in the University of Edinburgh.*

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1820 Thomas Emerson Headlam, M.D., *Newcastle-upon-Tyne.*

1829 T. Heberden, M.D., 11, *Upper Brook-street.*

1821 Vincent Herberski, M.D., *Professor of Medicine in the University of Wilna.*

1814 *William Hill, Esq., *Wootton-under-Edge.*

1830 H. B. C. Hillier, Esq., 85, *Gower-street, Bedford-square.*

ELECTED

1840 Thomas Hodgkin, M.D., 10, *Lower Brook-street.*

1813 Joseph Hodgson, Esq., F.R.S., *Surgeon to the General Hospital, and to the Eye Infirmary, Birmingham.*

1835 T. H. Holberton, Esq., *Surgeon Extraordinary to the Queen Dowager; Hampton.*

1814 Henry Holland, M.D., F.R.S., *Physician Extraordinary to the Queen; and Physician in Ordinary to His Royal Highness Prince Albert;* 25, *Lower Brook-street.*

1815 James Home, M.D., *Professor of the Practice of Physic in the University of Edinburgh.*

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1828 Edward Howell, M.D., *Swansea.*

1822 Robert Hume, M.D., *Inspector of Hospitals;* 9, *Curzon-street.*

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1820 William Hutchinson, M.D.

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1826 William Ingram, Esq., *Midhurst.*

1818 Henry Irwin, M.D., *Deputy-Inspector of Hospitals; Sligo.*

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1841 Paul Jackson, Esq., *Thayer-street, Manchester-square.*

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1825 John B. James, M.D.

1839 Julius Jeffreys, Esq., F.R.S., *Larkhall-grove, Clapham.*

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1821 Edward Johnson, M.D., *Weymouth.*

1820 James Johnson, M.D., 8, *Suffolk-place, Pall Mall.*

1837 H. C. Johnson, Esq., 6, *Saville-row.*

1814 Edwin Goddin Jones, M.D., *Southampton.*

1835 H. D. Jones, Esq., 20, *Soho-square.*

ELECTED

1837 T. W. Jones, M.D., *Enfield.*

1829 *G. Julius, Esq., *Richmond.*

1816 *George Hermann Kauffmann, M.D., *Hanover.*

1815 Robert Keate, Esq., *Serjeant Surgeon to the Queen; Surgeon to her Royal Highness the Duchess of Gloucester; and Surgeon to St. George's Hospital;* 15, *Albemarle-street.*

1822 Robert Masters Kerrison, M.D., F.R.S., 12, *New Burlington-street.*

1838 L. P. Kell, M.D., *Bridge-street, Westminster.*

1839 *David King, M.D., *Eltham.*

1836 P. N. Kingston, M.D., *Physician to the St. George's and St. James's Dispensary;* 7, *Charles-street, Berkeley-square.*

1806 James Laird, M.D., *Consulting Physician to the Public Dispensary.*

1805 William Lambe, M.D., 51, *Gloucester-street, Queen-square.*

1823 Edmund Lambert, M.D., *Salisbury.*

1840 John Wallis Lambert, Esq., 57, *Berners-street.*

1840 Samuel Lane, Esq., *Grosvenor-place.*

1814 George Langstaff, Esq., 2, *New Basinghall-street.*

1809 William Lawrence, Esq., F.R.S., *Surgeon Extraordinary to the Queen; Surgeon to St. Bartholomew's Hospital, and to Bridewell and Bethlehem Hospitals; Lecturer on Surgery at St. Bartholomew's Hospital;* 18, *Whitehall-place.*

1816 G. E. Lawrence, Esq.

1840 Thomas Laycock, M.D., *York.*

1823 John G. Leath, M.D.

1822 John Joseph Ledsam, Esq., *Surgeon to the Birmingham Eye Infirmary.*

1822 Robert Lee, M.D., F.R.S., *Physician to the British Lying-in Hospital, and Physician-Accoucheur to the St. Marylebone Infirmary; Lecturer on Midwifery at St. George's Hospital*; 14, *Golden-square.*

1823 Henry Lee, M.D., 21, *Charlotte-street, Bloomsbury.*

1839 John Lee, M.D., *Physician to the Royal Metropolitan Hospital for Children;* 27, *Grafton-street, Fitzroy-square.*

1836 Frederick Leighton, M.D.

ELECTED

1806 John Lind, M.D.

1835 Robert Liston, Esq., F.R.S., *Surgeon to the North London Hospital; 5, Clifford-street, Bond-street.*

1818 Robert Lloyd, M.D.

1824 Eusebius Arthur Lloyd, Esq., *Assistant Surgeon to St. Bartholomew's Hospital, and Surgeon to Christ's Hospital; 14, Bedford-row.*

1820 J. G. Locher, M.C.D., *Town Physician of Zurich.*

1824 Charles Locock, M.D., Vice-President, *First Physician-Accoucheur to the Queen; Physician to the Queen Dowager, and to the Westminster Lying-in Hospital; Hanover-square.*

1836 Joseph S. Löwenfeld, M.D., *Berbice.*

1815 *Peter Luard, M.D., *Warwick.*

1816 *James Macartney, M.D., F.R.S., M.R.I.A., *Professor of Anatomy in Trinity College, Dublin.*

1814 Sir James Macgrigor, Bart., M.D., F.R.S. L. and Ed., *Director-General of the Medical Department of the Army; Camden-hill, Kensington.*

1823 George Macilwain, Esq., *Consulting Surgeon to the Finsbury Dispensary; 9, Argyle-place.*

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1824 Sir Henry Marsh, Bart., M.D., *Dublin.*

1838 Thomas Parr Marsh, M.D., *Shrewsbury.*

ELECTED

1841 James Ranald Martin, Esq., 9, *Grosvenor-street.*

1840 John Marston, Esq., 75, *Gloucester-place.*

1819 *John Masfen, Esq., *Surgeon to the County General Infirmary, and Fever Hospital, Stafford.*

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OBSERVATIONS

ON THE

STRUCTURE OF THE ENTOZOA

BELONGING TO THE

GENUS CYSTICERCUS.

By GEORGE GULLIVER, F.R.S., F.Z.S.,

ASSISTANT-SURGEON TO THE ROYAL REGIMENT OF HORSE GUARDS.

Communicated by Dr. CLENDINNING.

READ DECEMBER 8TH, 1840.

The structure and economy of the lower entozoa is extremely interesting, because it is intimately connected with the theory of generation; and the physiology of the cyst-worm is peculiarly important, as it not only occurs in man, but is one of the very few parasites that infest the muscular fibre of the animals most commonly used by him as food.

In a short note, "on certain oval corpuscles obtained from the genus cysticercus," read to the Zoological Society last March, I drew attention to the fact that, if the white part near to the head of the entozoon be gently pressed, a little rather viscid fluid will escape, in which will be found a great number of oval corpuscles, presenting a beautiful microscopic object.*

The intention of the present communication is to show the situation and extent which these bodies

* Proc. Zool. Soc., Mar. 10, 1840.

occupy in the worm, and their probable use in its generation; with an attempt to elucidate some other points in the structure of the parasite, which, I believe, have hitherto either been imperfectly illustrated, or altogether neglected. In the pursuit of this object it is not proposed to give an account of the observations of preceding anatomists, because, in a memoir of this kind, it appears desirable to be as brief as may be consistent with perspicuity; and all that is known on the subject may be found in a valuable paper by Dr. Knox of Edinburgh, or in the more recent article by Professor Owen in Dr. Todd's Cyclopædia of Anatomy.

1. *Of the Oval Corpuscles.* (Figs. 2, 3, 8, and 9.)—The figure of these bodies is that of a short ellipse, generally somewhat flattened, their length being to their breadth rather less than one and a half to one. Sometimes, however, they are nearly circular. Their diameter is indicated by the following measurements, in fractions of an English inch, the common-sized corpuscles being first noted, then those of small and large size, and lastly the average deduced from a computation of the whole.

Long diameter,

1—1500	Common Sizes.
1—1333	
1—1103	
1—2666	Extremes.
1—1000	
1—1352	Average.

Short diameter,

1—2000 } Common Sizes.
1—2666 }

1—2900 } Extremes.
1—1333 }

1—2030 . Average.

They are of a whitish colour, smooth on the surface, and have a glistening appearance when seen by reflected light; by transmitted light, they present a darkish tinge towards the circumference, often with much brilliancy of the surface, and a remarkably clear and regular outline, although they sometimes appear with a dull white tint and an uneven margin. The majority of them are so far opaque that their interior cannot be seen; but in some, which are more transparent, a nucleus or cell is visible, generally oval, though occasionally circular in shape, for the most part situated in the centre of the corpuscle, but sometimes near to its edge. The texture of the nucleus is commonly granular; and this may be shown by breaking the corpuscles by compression, as seen in fig. 9.

The neck of the worm (figs. 2 and 3) is so thickly studded with the corpuscles, that its colour and opacity seems to be caused by them, as the intervening tissue is nearly transparent. They are most numerous about the middle of the neck, where the interspaces of the superficial layer are hardly larger than the corpuscles themselves, and those situated more deeply are closely clustered together.

Towards the head their number diminishes, and they are but thinly scattered in the neighbourhood of the suctorious orifices. But, notwithstanding the corpuscles are so abundant in the neck, they suddenly terminate where this part expands into the bladder-like body of the worm. (Pl. I., fig. 2. *a*.) Those forming the superficial layer appear ready to be cast off, for many of them will fall into a drop of water dabbed with the part, and they may be obtained in great numbers by gently scraping the surface of the corium.

When treated with muriatic or acetic acid, the corpuscles are quickly dissolved, and a plentiful extrication of gas takes place. The solution yields a white precipitate with oxalic or sulphuric acid. During the solution, the nuclei often become visible, and these sometimes appear to inclose a minute spherule, or nucleolus.

The corpuscles are not contained in any visible sac or cyst, but are situated in the parenchyma, which tissue much resembles that of the caudal vesicle, a fact which it would have been difficult to determine, but for the ready solubility of the corpuscles in some acids which have no effect on the spherules of the vesicle.

2. *Of the bladder-like body, or caudal extremity of the worm, and its containing cyst.* (Figs 4. and 5.)—The semi-pellucid body, or caudal vesicle, is composed of a homogeneous and obscurely granular substance, throughout pervaded by oil-like spherules, having the characteristic variation in size of such

particles, their diameter ranging from $\frac{1}{20000}$th to $\frac{1}{3000}$th of an inch.

Excepting some contraction, acetic and muriatic acids produce no change in the tissue, no elimination of gas; neither affect the colour of the part, nor alter the character of the oil-like globules.

The cyst, containing the worm, nearly resembles condensed cellular tissue or thickened serous membrane; and, when highly magnified, presents an indistinct cellular arrangement, sometimes with an appearance of very delicate filamentous bands, either parallel or crossing each other; to exhibit this, however, requires a very deep object-glass. Several minute blood-vessels ramify through the walls of the cyst; but it is hardly necessary to add that none of these could be detected in the worm.

Muriatic acid only causes the texture of the cyst to swell; but it is immediately made transparent by acetic acid, though it will be recollected that the substance of the entozoon is not thus changed by the acid.

The fluid of the hydatid exerts no action either on litmus or turmeric; and the quantity of albumen present in the fluid must be very small, as only slight turpidity was produced by heat, nitric acid, or corrosive sublimate.

3. *Of the Hooks or Spines of the Worm.* (Figs. 6, 7, and 10.)—The hooks, from their shape, might more properly be called claws. Each has a club-shaped arm, continued into a taper, sharp, and slightly-curved spine; and at the point where the

latter begins to form from the arm, arises a short blunt lateral branch or process. This latter is generally naked, as shown in fig. 7, but in some species has a sort of sheath-like appendix, as in fig. 10. In this variety there seems to be a hollow or cancellous texture near to the base of the claw. The appendix occasionally appears on the process like the cup on the acorn. These peculiarities are remarkable in the cyst-worm infesting the liver of the rat and mouse.

The claws form a double circle around the proboscis, there being in fact two circles, or in other words, a long and a short set of claws, one of each set being arranged alternately : their figure is identical, although their size differs remarkably ; and this difference is chiefly confined to the length of the club-shaped arms of the claws. The arms are fixed in the parenchyma ; the base of each points to the centre of the extremity of the proboscis, and the free spines, like the spokes of a wheel, to the circumference. In the Cysticercus tenuicollis each set consists of sixteen, making the whole number thirty-two. The disc thus surrounded at the end of the proboscis appears to be imperforate, and merely calculated for adhesion or locomotion ; but the four lateral mouths are often distinctly patent.

The claws are not acted on by muriatic or acetic acid, but are more easily seen and counted by the aid of these re-agents.

In the interesting memoir by Dr. Knox, the following observations occur: "Whilst examining the hooks or spines under powerful glasses, I remarked that they were arranged in a double row, and that at the base of each alternate one, so far as I could observe, there was a small rounded body, resembling an ovum or egg, and their appearance has suggested to me the idea that these rounded bodies may be the young cysticerci developed at the base of each hook. Further observation has led me to think that this appearance was confined to one entire row, and they only appeared to be alternate in consequence of the arrangement of the two rows. But this opinion of the uses of these two parts I throw out only as a conjecture." *

If the claws be examined detached from the proboscis, their real configuration will immediately become manifest; and it may also be clearly seen without disturbing their connections, if a small quantity of one of the acids before mentioned be added to the part. Otherwise, the blunt lateral processes may easily be mistaken for tubercular bodies, particularly when seen foreshortened, as very frequently happens. (*a a a*, fig. 6.) Indeed this was the case in some of my first observations; but Mr. Siddal, the excellent veterinary surgeon of the Blues, soon enabled me to correct the error, while he was executing the drawings.

It appears to me probable that the oval corpuscles, described in the present communication,

* Lancet, Vol. 2, 1837-38, p. 397.

are, in fact, the ova of the cysticercus; for it will be difficult to entertain any other view of their nature when we recollect their heterogeneous structure, their regularity in size and shape, their aggregation together in the true body of the worm, and the abundance of carbonate of lime contained in their shells. I am not aware that any gemmæ or sporules have yet been found to possess these characters; if, therefore, the oval corpuscles should be regarded as sporules, they must be sporules of a peculiar kind. As it is yet questionable how the corpuscles escape from the cyst, it will be necessary to institute a further examination of this part. I have not yet succeeded in detecting an aperture. But Dr. Knox has given an engraving of one instance in which the head and neck of the cysticercus cellulosæ was seen to project through a natural and well-defined opening in the cyst. With what facility the oval corpuscles may be disseminated will be understood, when it is recollected how prone they are to separate from the surface of the corium.

It is an interesting question whether the spherules of the caudal vesicle may not be considered as nuclei, which advance to the neck or body of the worm, and there become invested with cells, and so formed into the complete oval corpuscles.

Although the consideration of the basis of a methodical arrangement of the entozoa forms no part of the object of the present memoir, I may express my belief that an exact knowledge of the structure and arrangement of the claws of the cystoid family is

likely to lead to an accurate discrimination of many genera and species hitherto but imperfectly characterized. Rudolphi, indeed, in the formation of his orders, availed himself of the characters afforded by the tentacles of the parasites ; but although the importance of these parts was thus early appreciated, it does not appear to me that they have ever yet been described with sufficient accuracy.

It will be understood that the true body of the cysticercus is that part which, in compliance with custom, I have frequently called the neck ; and that the globular portion of the hydatid is in reality the caudal or terminal vesicle.

I am indebted to the kindness of my friend, Mr. Siddall, for the accompanying drawings. They are very faithful representations of the objects, having been executed with great care by means of the camera lucida.

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*Description of the Figures.**

Fig. 1.—Cysticercus of the natural size, removed from the cyst, and the head and neck of the worm pulled out. From the omentum of the Mexican deer. All the other figures, except the last, are from the same worm.

Fig. 2.—Head and neck of the worm magnified, and exhibiting the situation and extent of the oval corpuscles, which are very abundant in the middle of the neck, diminishing in num-

* See Plate I. at the end of the Volume.

ber about the head and near to the claws, and wholly disappearing at *a*, where the neck, or body begins to expand into the bladder-like extremity of the parasite.

Fig. 3.—Portion of the neck magnified about 130 times in diameter, so as to show more clearly its structure and the disposition of the superficial layer of the corpuscles.

Fig. 4.—Structure of the caudal vesicle, exhibited in a portion magnified to the same degree as in fig. 3. The oil-like spherules are very distinct, and totally different from the oval corpuscles.

Fig. 5.—Portion of the cyst magnified to exactly the same degree as in figs. 3 and 4.

Fig. 6.—The armed proboscis, enlarged about 145 times in diameter, showing the two circles of claws, and the alternate arrangement of those forming the long and the short set. Some of the lateral processes, as at *a a a*, being seen foreshortened, resemble tubercles. Several of the oval corpuscles, of smaller size than those situated in the neck, are scattered through the parenchyma near to the claws.

Fig. 7.—One of the short and two of the long claws, magnified about 500 times, linear admeasurement. B, the arms; C, the lateral processes; D, the spines. (One of the arms is by mistake marked P.)

Fig. 8.—The oval corpuscles enlarged about 480 diameters: some of them appear homogeneous, others have granular nuclei, and one has a cross split in the shell, from drying.

Fig. 9.—The same, exhibiting their granular interior after the breaking of the shells by compression.

Fig. 10.—A claw from a worm (Cysticercus fasciolaris?) of the mouse's liver. See Sect. 3.

CASE

OF

OSSEOUS UNION

OF A

FRACTURE OF THE NECK OF THE FEMUR

WITHIN THE CAPSULE.

By WALTER JONES, Esq., Surgeon,

WORCESTER.

Communicated by EDWARD STANLEY, Esq., F.R.S.

READ NOVEMBER 24TH, 1840.

Jenkin Thomas slipped down as he was returning home one evening about the middle of October 1838. He was seen on the following day by Mr. Cole, House-Surgeon to the Infirmary, who detected what he considered to be a fracture of the neck of the femur. He applied a splint to the outside of the limb, extending from the pelvis to the foot, and bound the legs together, making use of the left as an inner splint; a bandage was also applied around the pelvis; his chief object having been, as he informs me, to keep the limb of the same length as the other, and to preserve the relative position of the malleoli. He suffered so much pain in the limb, aggravated by a troublesome cough, that he removed the splint and bandages after they had

been applied a few days, which obliged Mr. Cole to reduce the limb a second time, and re-apply the splint. After this, with the assistance of laudanum, to allay the pain and quiet the cough, he went on well. In about eight weeks the splint and bandages were removed, and he was allowed to get up soon afterwards. During the following spring and summer he was able to move about with the assistance of a stick, but with the limb shortened about an inch and a half, and considerably everted. He came under my care as an inmate of St. Oswald's Hospital, 13th January 1840, and died on the 20th April following, of chronic disease of the lungs. At the time of the accident he was more than 80 years of age, and when he died was 82 and 2 months, having lived after the injury a year and a half. He was of small make and short stature, had generally enjoyed good health, worked hard, lived well when able, and drank freely at times ; so active was he at the time of the accident, that he had danced a hornpipe the same evening.

On dissection, the capsule was found very much thickened, and it was not until the shaft of the bone was divided that the knife could be passed around the joint, so contracted was the space between the trochanter major and the edge of the acetabulum. The direction of the fracture could not be traced, or the bond of union made out, until the bone had been macerated. As portions of the capsule became loose, they were removed with the forceps, which enabled me to discover what I believe to be the

case, that the fracture occurred entirely within the capsule.

Description of the foregoing specimen by Mr. Stanley.

The history of the case is clearly that of fracture of the neck of the femur; the appearances of the bone show that there has been a fracture which has re-united by an osseous medium, and the direction of the fracture is such as, in my opinion, can permit no doubt that it was confined to the portion of the neck of the bone covered by synovial membrane; consequently, that it was wholly within the capsule. The fracture extends through the basis of the head of the bone in the line of its junction with the neck. As in other cases of the same kind, great part of the neck of the bone has disappeared, and, in consequence, the head is proportionately nearer to the trochanter major and shaft of the bone; its re-union has, in fact, taken place in part to the remaining portion of the neck, and in part to the shaft. This union is certainly osseous. In addition to the first maceration of the bone with its surrounding soft parts, it was subsequently immersed for several days in a strong solution of carbonate of potash, and one half of the bone has been boiled in water for three hours without the slightest yielding perceptible in the line of the fracture.

The specimen is preserved in the Museum of St. Bartholomew's Hospital, to which it was very kindly presented by Mr. Jones.

OBSERVATIONS

ON

VACCINATION AND SMALL-POX,

MORE ESPECIALLY WITH REFERENCE TO THE

THEORY OF VACCINE INFLUENCE,

AND THE

RELATION SUBSISTING BETWEEN THE CICATRIX AND THE CHARACTER OF THE CONSECUTIVE VARIOLA.

By GEORGE GREGORY, M.D.,

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS, AND PHYSICIAN OF THE SMALL-POX AND VACCINATION HOSPITAL, ST. PANCRAS.

Communicated by JAMES M. ARNOTT, Esq.

READ JANUARY 26TH, 1841.

The interest arising from the re-appearance of small-pox as an epidemic in London, and the flattering manner in which my brief notices of the last epidemic (that of 1838) were received by the members of the Society, are the motives which prompt me to submit the following hints to their consideration. As my object is rather to throw out topics for discussion, than to establish any particular doctrine, the loose and somewhat desultory character of the succeeding observations will, I trust, be excused.

The epidemic of 1838 ceased with the frosts of Christmas; and from January 1839 to the end of

September 1840, (a period of 21 months,) the metropolis was remarkably free from small-pox. The admissions into the Small-pox Hospital during the first three quarters of 1840 amounted only to 142, being at the rate of sixteen *per mensem*. In October 1840, a new epidemic began, and 46 patients were admitted in that month. In November the admissions were 64. In December, 75. From the 1st of January 1841, to the present day, (Monday, January 25,) the admissions have been 93, being nearly at the rate of 4 *per diem*—the greatest number ever admitted in one month since the establishment of the hospital in 1746.

Among the 327 patients admitted in 1840, 11 had complaints not proving to be of a variolous nature.* Of the remaining 316, 194 were wholly unprotected, of whom 87 died, or 45 out of every hundred! 120 had previously been vaccinated, of whom 8 died, being in the ratio of 7 per cent. only. Two were supposed to have previously undergone small-pox.

Of the 316 patients, 47 were under 5 years of age, of whom 28 died; 45 were between 5 and 15 years of age (inclusive), of whom 9 died; 224 were adults, of whom 58 died. The total mortality was 95, or 30 per cent. on the gross admissions.

* Viz.—Varicella vera 4
Lichen febrilis 3
Rubeola 2
Febris continua communis 2
—
11

One of the cases of supposed secondary small-pox presented some rare phenomena.

CASE.

Phœbe Monk, 24 years of age, was admitted Nov. 30, 1840, being the first day of eruption, and the sixth of illness. She was from the workhouse of St. George's in the East, in which parish small-pox was then prevalent. She reports that she had been *inoculated* in early life at Brentwood. Two good cicatrices are perceptible. The patient was extremely depressed, and after three days the eruption had made so little progress, that its character could not be ascertained. At the end of ten days a papuliform eruption, resembling in its arrangements that of variola, had fully developed itself; but it then died away, and the patient recovered without any fluid secretion from it. A case in all respects resembling this, excepting that the eruptive process was accompanied throughout its entire course with an almost intolerable pruritus, occurred in private practice nearly at the same time, and was attended by myself and Mr. Thomas Porter of Euston Square. The lady, the subject of this latter case, reports that she went through small-pox soon after birth. The variolous origin of the malady was pretty clearly established in this instance, one undoubted case of variola having occurred next door, and one in the same house.

One hundred and twenty cases, I have said, of

variola succeeding vaccination occurred at the hospital during the past year. My attention had long been directed to ascertain whether any, and what, relation subsisted between the number and character of the vaccine cicatrices, and the intensity of the consecutive variola; and I took this opportunity of investigating the subject. I found, by careful inspection of the arms of those who attended for vaccination, and for re-vaccination, that much caution was requisite in forming any conclusion regarding the original vaccination, by the appearance of the arms in after life. It must always be borne in mind, that the full measure of vaccine influence is received by each individual on the eighth day from insertion. If the disease be subsequently rendered mild, either by art or peculiarity of habit, the cicatrix will be small and fugitive. Even should the vesicle be then destroyed by caustic, or the part cut out, and allowed to heal as a common sore, and no specific scar remain, still the individual would remain *vaccinated.* On the other hand, should the disease be aggravated by neglect or bad management, or a foul or inflammatory state of the child's blood, high secondary inflammation would be set up, and a large, wafery, or otherwise irregular cicatrix would form, which is permanent in after life. The amount of vaccine protection remains however in both instances *the same,* and the probable character of the consecutive variola receives no elucidation from inspection of the arm. The character of the cicatrix, then, depends more on the *accidental* or *secondary,* than

it does on the *primary* or *specific* inflammation, and hence arises the small reliance which can be placed on it as a measure of vaccine protection.

Undoubtedly in the majority of cases wherein the cicatrices are *numerous*, *normal*, and *well defined*, the consecutive variola is mild and varicelloid; again, where the consecutive disease proves severe, there the cicatrices will be imperfectly seen, or altogether wanting. But instances of the converse of these propositions are so numerous as scarcely to be called *exceptions* to a rule. As the profession are probably not so familiar with these latter cases, I have ventured to submit two opposing series to the notice of the Society. The first shows that small-pox after vaccination often proves *severe* where the cicatrices are *normal*. The second points out that the lightest and most truly varicelloid eruptions co-exist with *small* and *very imperfect* cicatrices.

SERIES I.

Case I.—Ann Spragen, ætatis 24; servant. Admitted into the Small-Pox Hospital April 1, 1840 (3rd day of eruption, 5th of illness). Was vaccinated when young at Hexham. *Bears two good cicatrices.* The small-pox proved semi-confluent and severe, commencing with general dingy redness of the skin, petechial spots, and an hæmorrhagic aspect of the conjunctivæ. She recovered, and was discharged, cured, April 24th.

Case II.—Richard Connell, ætatis 24. Admitted

July 7 (4th day of eruption, 7th of illness). Was vaccinated at the National or Sackville-street Institution, Dublin, and bears *one good cicatrix*. The small-pox proved confluent and very severe. He remained a month in hospital, and left it, cured, August 8.

Case III.—Alfred Richardson, ætatis 18. Admitted September 9 (4th day of eruption, 6th of illness). Was vaccinated at Wrotham, in Kent, when young. Bears on the arm *an excellent cicatrix*. Small-pox appeared, at first, full, confluent and formidable. In its progress it became modified and seedy. Discharged, well, Sept. 29. (21 days in hospital.)

Case IV.—Henry Valentine, ætatis 44. Admitted Nov. 20 (4th day of eruption, 7th of illness). Vaccinated 30 years ago in Bedfordshire. His arm exhibits *one most perfect cicatrix*, indented and radiated. The aspect of the disease, on admission, was confluent, threatening danger, but it became modified, and he left the hospital Nov. 30.

Case V.—Carolo Galli (an Italian), ætatis 18. Admitted December 5. Had been vaccinated, when young, in Italy. *Has four excellent cicatrices.* Small-pox proved confluent and severe in the highest degree. A slight trace only of modification was perceptible on certain parts of the extremities. His life was for several days despaired of. He recovered, however, and left the hospital, well, January 2nd, 1841.

Case VI.—Alfred Broadbridge, ætatis 16. Ad-

mitted December 9 (1st day of eruption, 3rd of fever). Was vaccinated, when young, by my friend Mr. Wilks of Charing, Kent. *Has three good cicatrices.* The consecutive small-pox was confluent and severe, with much cellular inflammation. He did well, and was discharged, cured, January 5, 1841.

Case VII.—William Leech, ætatis 25. Admitted August 6 (3rd day of eruption, 5th of illness). Vaccinated, when young, at Wickham-Market. *Four excellent cicatrices are observable.* Small-pox in him proved confluent and very severe, modified only in a trifling degree. He was discharged, cured, August 25.

Case VIII.—John Mitchell, ætatis 39, of intemperate habits. Admitted October 21 (7th day of eruption, 9th of disorder). Was vaccinated, at 8 years of age, at Battle, Sussex, by a medical practitioner. Has on the arm *one perfect cicatrix*, indented and radiated. Small-pox was, in this case, confluent and wholly unmodified. He died October 27, after being one week in hospital.

SERIES II.

Of Cases where, with small and imperfect Cicatrices, the consecutive Variola proved light and varicelloid.

Case I.—Filippo Scarpandi, ætatis 16. Admitted January 3, 1840 (3rd day of eruption, 5th of illness). Was vaccinated, in early life, in Italy, but

the cicatrix is scarcely discernible. He had a varioloid disease of the mildest character, and was discharged, cured, January 14.

Case II.—Sarah Ann Healey, ætatis 20. Admitted May 7 (2nd day of eruption, 3rd of illness). Vaccinated, young, at Wallingford. One small cicatrix. Eruption mild and varicelloid. Left the hospital May 19.

Case III.—John Dodd, ætatis 22. Admitted June 2 (3rd day of eruption, 5th of illness). Vaccinated, young, at Hexham. One small superficial cicatrix. Eruption varicelloid and trifling. Left the hospital June 16.

Case IV.—Samuel Steel, ætatis 21. Admitted June 8 (5th day of eruption, 7th of illness). Vaccinated, when young, near Ipswich. Has one small cicatrix. Eruption varicelloid. Discharged June 24.

Case V.—Thomas Stodden, ætatis 22. Admitted June 20 (2nd day of eruption, 3rd of illness). Vaccinated, at 14 years of age, at Wingham, in Kent, by Mr. Sankey. Has one small cicatrix. Eruption varicelloid. Remained in hospital 16 days.

Case VI.—George Rixon, ætatis 24. Admitted October 17 (6th day of eruption, 7th of illness). Vaccinated, when 9 years old, at Radnage, a village in Buckinghamshire, in three places. Two vesicles left no cicatrix. One small cicatrix only is perceptible. The eruption, on admission, had reached its crisis, being a true specimen of the light varioloid.

No one can doubt, that if the consecutive variola had proved, in this instance, confluent and severe, the vaccination would have been declared, from the aspect of the arm, defective, and not trustworthy. Yet it proved most efficient. He left the hospital October 26.

Case VII.—Eliza Peel, ætatis 16. Admitted October 21 (2nd day of eruption, 4th of illness). Was vaccinated at Canterbury, when young. Has two small cicatrices. Eruption light and varicelloid. Discharged after a few days' residence in the hospital.

Case VIII.—Charles Dearborn, sailor, aged 28. Admitted October 3rd (4th day of eruption, and 6th of disorder). Was vaccinated, when young, in Liverpool. He afterwards entered the American navy, and from the absence of cicatrix was *re-vaccinated* by the surgeon of the "*United States*," American ship of the line. No effect followed, and *no cicatrix was perceptible on admission.*

The consecutive variola, in him, proved semi-confluent in quantity, but highly modified in character and aspect, running so rapid a course that he was discharged, cured, October 10th, having been only one week in hospital.

It follows, I think, from these cases, that the cicatrix cannot be relied on as affording any certain test of the degree to which the constitution has im-

bibed an anti-variolous influence. Peculiarity of habit, similar to that which rendered certain persons patient of the variolous poison before the discovery of vaccination, and which now makes some patient under the venereal or mercurial poisons, and others irritable under the most minute quantities of those poisons, must probably be looked to as the best means of explaining the diversities in the aspect of consecutive variola.

An impression that the variolous and vaccine poisons are intrinsically the same, has long prevailed. The notion was originally broached by Dr. Jenner, and it was steadily maintained by him to the latest period of his life. He maintained that the vaccine was the *primary*, and the variolous the *secondary* or aggravated form of the virus,—that the process of vaccination was only a milder kind of inoculation,—and, consequently, that the proximate cause, or *theory of vaccine security*, was to be found in that law of the animal economy by which one attack of small-pox affords security against a second.

The doctrine of the identity of the variolous and vaccine poisons has again been brought into notice by the interesting experiments of Mr. Ceely of Aylesbury. The remarkable fact that the mucous surfaces of the cow will receive the poison of small-pox, and convert it, in 8 days, into the vaccine, gives a strong *primâ facie* colouring to the hypothesis, which indeed, by many, is now considered as established beyond the possibility of doubt or cavil.

A doctrine so important as that of the *Identity of the Vaccine and Variolous Poisons*, involving, as it does, such important pathological results, ought not, however, to be received without inquiry. I proceed, therefore, briefly to investigate the grounds on which it stands.

The facts regarding the Origin of Vaccinia, so far as they are yet known to us, are these. The morbid secretions from the cow, which possess the singular properties of transplantation to the human frame, of exciting there a like disease, and subsequently of protecting the human body, to a certain extent, from the assaults of small-pox, may be produced in that animal in four modes.

1. They are generated, spontaneously in the cow, under certain circumstances of soil, season, and locality. Such diseased secretions are often met with in cows soon after parturition, in the spring season, and when feeding upon young grass. But they arise also spontaneously from other and less known causes, and the disorder spreads like other epizootic maladies. It was this form of vaccine disease which Jenner chiefly studied.

2. The very same malady, developing the very same morbid secretion, is often observed to spread *by contagion*:—that is, by the application of the diseased secretion, thus generated, to the teats of healthy cows, differently circumstanced, by the hands of the milker.

3. The same morbid secretion, possessed of the same qualities, may be, and frequently has been,

generated in the teats of the cow by the application to them of the matter formed by the heel of the horse, when affected with the disorder called by farriers *The Grease*. This *greasy* matter may also be transplanted to man directly, without the intervention of the cow, proving that the anti-variolous property does not depend on any peculiar change which the virus undergoes while passing through that animal.

4. The same morbid secretion may be excited artificially in the cow by applying to the teats, or the mucous surfaces of the vagina, vaccine lymph from the arm of a child, even though 20 years had elapsed since that lymph had been humanized or assimilated to the human constitution.

This curious fact was first determined at Paris, in 1836, by M. Bousquet, the intelligent chief of the National Vaccine Establishment of France. The researches of Mr. Ceely have fully corroborated the truth of this statement, and I have frequently seen, both at Paris and at the Small-Pox Hospital of London, this species of lymph, the *Retro-Vaccine*, or *Vaccine Renouvellée*, as it is called, in use, and producing the most satisfactory results.

To these four modes of exciting that kind of morbid secretion in the cow, which we call Vaccinia, (one constitutional and three artificial,) the labours of Mr. Ceely have now added a fifth. He has shown that the very same object may be obtained by applying to the mucous surfaces of the cow the matter of human small-pox. The vessels of the part are thereby ex-

cited to the production of a fluid or humour, identical in all its properties with that which arises from a constitutional and febrile disturbance in the cow's system, from contagion, from the matter of *Grease*, or the long-humanized vaccine virus.

When we consider that five modes of producing this morbid secretion in the cow are now known to exist, it is not unreasonable to suppose that others may hereafter be discovered. In this state of our knowledge, then, surely we cannot be justified in assuming the fifth and the last discovered of the whole, as the most important, and as affording the true clue to the mystery of vaccine protection. We should reflect that Mr. Ceely's experiments have entirely set aside Dr. Jenner's notion that vaccinia was the original or primitive poison, which time and fortuitous circumstances had aggravated into the malignant or secondary form, which we call small-pox. They have proved (if indeed they have *any* bearing on the intimate nature of these poisons) that small-pox is the *primary*, and cow-pox the *secondary* form. But when we further reflect on the absence of a contagious principle in Vaccinia, and the remarkable fact that febrile disturbance is not essential to its perfect development, we shall probably be nearer the truth in saying that the vaccine is a poison *sui generis*; that its relation to variola is still hypothetical; that the real and intimate nature of the protection which it affords is still unknown to us; and that a thorough acquaintance with its anti-variolous powers must be derived, not

from analogy, but from an extended and careful observation of facts, continued through a long series of years.

It is worthy of record, that among the 120 cases of variola occurring at the hospital in 1840, subsequent to vaccination, eleven only were under 16 years of age.* The youngest person admitted under such circumstances was of the age of 7. The first occasion on which I have ever known a child under 5 years admitted with small-pox after vaccination, occurred last week. The case is as follows:—

William Andrews, aged 2 years and 8 months. Admitted Jan. 20, 1841 (2nd day of eruption, and 4th of illness). This child was vaccinated by Dr. Epps, at the station in Holborn, in July (or August) 1838, when two months old. Two good vesicles arose. No lymph was taken from them. Two small cicatrices remain. The small-pox proved of the light varicelloid kind. The child is rapidly convalescing, and will leave the hospital Jan. 25.

Before concluding this paper, I would wish to call the attention of the members to a fact of great

* Viz.:—

At 7 years of age, admitted		1
10	———	2
11	———	1
12	———	1
14	———	3
15	———	3
Total under 16 years		11

importance in the police of hospitals. When stating the occurrences of 1838, I was under the painful necessity of announcing the deaths of several patients by Erysipelas, Typhus, Malignant Cynanche, and other formidable consequences of "*Hospital Miasm.*" To remedy this defect in our establishment, a wing for vaccination was built in 1839, and the whole of the old building devoted to the reception of small-pox cases. The result has been most satisfactory. By spreading the same number of cases over double the extent of surface, we have hitherto escaped the fearful evils of superadded fever. No case of a typhoid character has occurred during the present epidemic, and only one of erysipelas.

ON

GOUTY CONCRETIONS,

WITH A

NEW METHOD OF TREATMENT.

By ALEXANDER URE, Esq., M.D., A.M.,

MEMBER OF THE ROYAL COLLEGE OF SURGEONS, LONDON.

Communicated by Sir BENJAMIN C. BRODIE, Bart.

READ JANUARY 26TH, 1841.

It is well known that persons afflicted with gout are liable to the effusion of a white liquid into many of the internal cavities of the body. This liquid consists of serum and urate of soda, with sometimes a little urate of lime. In the course of time, the serous particles become absorbed, leaving a kind of soft clayey residuum, which afterwards becomes hard and friable; thus forming the so-called tophaceous concretions or chalk-stones.

Gout may be regarded as a specific inflammation which seems to affect the serous and fibrous structures. Accordingly, we find that the above depositions most generally take place in the cavities of joints, in the bursæ mucosæ, in the ligaments, neighbouring aponeuroses and cellular membrane,

and in the periosteum. They have even sometimes been met with between the cutis and cuticle.

A remarkable instance of tophus in the ligaments, tendons, and aponeuroses about a joint, is described by Lobstein,* and another of the same kind by Van der Boon Mesch.†

The effusion from which these concretions are derived, occurs not only during fits of gout, but likewise in the intervals; and as the extremities of the body, particularly the hands and feet, are the principal seat of the disease, it is there that the greatest accumulations take place. They occasionally, however, make their appearance about the articulations of the jaw and spine.‡

It is a remarkable fact, which has been clearly pointed out in Mr. Moore's valuable paper upon gouty concretions, in the first volume of the Transactions of this Society, that, although this process is usually preceded and accompanied by inflammation, yet there is no extravasation of coagulable lymph, no new covering or cyst surrounding the concrete matter,—like pus in an abscess. A circumstance which distinctly proves that the inflammation is not of a phlegmonous character, and that the non-absorption of the deposit is to be ascribed to physical causes.

* Compte Rendu sur les Travaux Anatomiques. Strasb. 1824.

† Eene scheidkunde ontleding van der Iichtkalk in Bydragen tot de naturkundige Wetenschappen. Amsterdam, 1826. D. I. No. 2. p. 127.

‡ Otto, Pathological Anatomy by South, p. 238.

Gouty tophus is not confined to man; it occurs also, though more rarely, in animals, when placed in a similar condition, that is, when fed for a length of time upon a highly azotised diet. Aldrovandi, an author of considerable repute in the 17th century, accurately details its effects on birds of prey, especially hawks: "Quæ quidem nihil aliud est quam tumor durus, ac gypso similis, circa digitorum articulos, estque malum maximi in rapacibus momenti. Impedit enim quo minus prædam captare possint, et incurabile plerumque est, quicquid dicant alii."*

Gout stones sometimes attain a very great size. Otto mentions his having seen them larger than a walnut.† Hence they become the source of more or less deformity, inconvenience, and pain. They interfere with the motion of tendons and joints, in some instances giving rise to spontaneous dislocation, in others to complete anchylosis. When bulky, they press and distend the surrounding parts, and not unfrequently produce ulceration of the integuments. Several cases have come within my knowledge, of persons in whom this morbid formation went on unceasingly during a series of years, so as to cripple them in every joint, and wholly unfit them for the duties of their calling.

Since one part of urate of soda requires about 4000 parts of water to dissolve it, it may be reasonably assumed that the refractory nature of the above deposits is due to their very sparing solubility in the fluids with which they come in contact. It

* Ornithologia, vol. i. p. 456. † Loc. Cit.

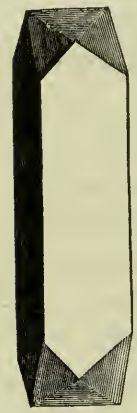
therefore occurred to me as a consequence deduced from some researches into the composition of the renal secretion in certain of the lower animals, that some means might be devised to enable us through the medium of the circulation so to modify that secretion in man as to supersede, for a time, the urates altogether.

The graminivorous animals, as the horse and cow, secrete from the kidneys a peculiar acid (the hippuric). It is present in their urine combined with soda. Now, the hippurate of soda, which may be considered the analogue of the basis of gout-stones, is an exceedingly soluble salt, (requiring only two parts of water, at 60° F., to dissolve one,) as are likewise the hippurates of potash, of ammonia, and of lime. Hence it appeared probable that were we to adopt such therapeutic measures as would determine the human kidney to secrete this acid instead of the uric, we should thereby, in all likelihood, controul and prevent the deposition in question.

I ascertained in the course of last summer, by repeated experiments, made first of all upon myself, and afterwards upon individuals labouring under gout, that the above substitution could be perfectly accomplished without the slightest risk of affecting the general health, or of irritating the urinary organs. The substance employed for this purpose was the benzoic acid. If an hour after a meal, a scruple of this acid be taken into the stomach, in the course of a couple of hours subsequently the urine voided, amounting to five or six ounces, will be found, on

adding a small quantity of muriatic acid, to yield a copious precipitate of beautiful rose-pink acicular crystals, which weigh, after being allowed to settle for a day, about fifteen grains. This quantity is by atomic computation equivalent to little more than one-half of the benzoic acid expended, so that the remainder must have made its escape by some other emunctory, probably the skin.

The above crystals, when examined by the microscope, display the characteristic form of the hippuric acid, namely, a four-sided prism, with a dihedral summit, as figured in the annexed wood-cut.*



It may be observed, that no trace whatever of uric acid, or of any of its salts, or of benzoic acid, could be discovered in the above urine.

A nearly analogous result is obtained when benzoate of ammonia or of potash is administered; and, under particular circumstances, the exhibition of one or other will be found preferable to the simple acid; either in the neutral state, or with an excess of base, when there is a disposition to acescence in the *primæ viæ*; apportioning the dose, in every instance, to the condition of the urinary secretion, previously ascertained by analysis.

By this singular interchange of elements, capable

* Benzoic acid crystallizes in hexagonal needles, or in pearly scales, and dissolves in two parts of sulphuric ether, whereas hippuric acid is but very sparingly soluble in that menstruum.

of being effected only by the aid of vital chemistry, we have an organic acid, containing 8 atoms of azote and 10 of carbon, replaced by one containing no less than 18 of carbon and only 2 of azote, and that even in what various eminent pathologists regard as a highly azotised state of the system.

It is obvious that this new plan of treatment, and which does not interfere with other remedial means, must be steadily persevered in for a considerable length of time, ere any adequate benefit can ensue. How far it may be applicable to various forms of calculous disease, connected with the gouty diathesis, remains for future investigation to decide. Most unequivocal proofs have already been afforded me, of its efficacy in correcting and removing certain disordered states of the urine in individuals prone to attacks of gravel.

HISTORY

OF A

REMARKABLE CASE OF PHLEBITIS,

WITH OBSERVATIONS.

By THOMAS H. SILVESTER, M.D.,

CONSULTING PHYSICIAN TO THE SOUTH LONDON DISPENSARY, ETC.

READ FEBRUARY 9TH, 1841.

Mr. P., æt. 59, observed on Friday evening, March 27th, a pimple on his upper lip, which he supposed to have arisen from a scratch in shaving. His friends had noticed him carrying his pen, whilst engaged in accounts, transversely between the lips. He had been using a steel pen, and a new metallic ink, and it appeared to them that this fluid had accidentally come in contact with the wound, and imparted to it the peculiar deep-red irritable aspect which was very observable. On the following Tuesday, the patient retired to bed early, complaining of general uneasiness, but neither fever nor head-ache were present, and he slept well. I saw him, for the first time, the next day, (Wednesday,) his pulse was 120, small and weak, the skin cool, and he did

not complain of thirst. The countenance was inexpressibly anxious, not unlike that of a person who has taken poison, or one who has been stabbed in the abdomen; the lip was greatly swollen, and he suffered more from a feeling of distension than from pain. So much difficulty was experienced in the attempt to open the mouth, that it became next to impossible to ascertain the state of the tongue; another hindrance arose from the tumified overhanging lip, beyond which the tongue could not have been projected had no other impediment existed. The tumefaction extended a little way upwards on each side of the alæ nasi, but not at all downwards towards the lower lip; it was of a dark red, almost livid, hue, and very firm to the touch. There were no vesicles nor bullæ, nor œdematous appearances on pressure; the pain was of a distending, and not of a burning kind. The affection was evidently not of a purely erysipelatous nature, yet in the depressed state of the vital powers, it bore so near a resemblance to the asthenic form of erysipelas, that, guided by analogy, I did not hesitate to adopt a plan of treatment sanctioned by ample experience in this species of malady. The patient was desired to take from four to six ounces of port wine in boiled sago during the twenty-four hours, and three grains of the disulphate of quinine every four hours. This mode of treatment seemed to promise the best effects,—the pulse became fuller and stronger, and the swelling ceased to spread,—the lip itself was cool, but of an immense size,—a glutinous exuda-

tion, which now appeared on its surface, thickening gradually from day to day by fresh additions, assumed at length the appearance of a coarse scab, with rocky projections, so perfectly inflexible, that not even the slightest movement of the lip could be effected.

The gums, and the interior of the mouth generally, were seen to be of a dark livid hue, and viscid saliva flowed unceasingly over the neighbouring parts, occasioning soreness and excoriation. On the fourteenth day of the disease, the skin was cool and perspirable, the pulse 80, still rather feeble, the lip was nearly free from uneasiness, although much swollen and thickly encrusted: the patient had slept well the previous night, he was enjoying, with a good appetite, his sago, and believed himself to be rapidly recovering. I observed on the very next day a large red cord, apparently terminating in a vein extending upwards at the side of the nose as far as the inner angle of the eye, first on the left, and afterwards on the right cheek. These inflamed vessels greatly resembled irritated absorbents, but they were of much larger size than the latter, being as big as a goose-quill, even whilst no fluid could be detected in their interior by the touch. After the lapse of five or six days, fluctuation was distinctly perceptible, and I then noticed at several points in the course of these suppurated veins, a slight degree of redness. These red spots became the seat, each, of an exudation precisely of the same character and appearance as that which had previously been observed on the upper lip. A viscid liquid at first es-

caped, and this, either hardening, or being succeeded by a secretion of thicker consistence, a series of projecting masses, somewhat larger than a horse-bean, of a yellowish green hue, not unlike the scabs of rupia, appeared along the course of the vessels. On one of these scabs or exudations being loosened from its seat, at a subsequent period, pus continued to flow for several days from the part which had received the violence. Another, which had escaped injury, and maintained its position up to a period within one week of the patient's death, dislodged itself spontaneously from the depression between the eyebrows, which situation it had occupied, leaving the parts underneath perfectly sound and healthy, but rather redder than natural.

On the twentieth day of the disease the veins of the forehead had begun to swell, and in a very short period they were to be seen, in great numbers, ramifying all over the fore part of the head, and extending beyond the vertex, presenting a most extraordinary appearance, difficult for the pencil to pourtray, and very imperfectly represented in the accompanying sketches.* The skin and cellular membrane occupying the spaces between the several inflamed vessels seemed at this stage of the complaint to be almost wholly unaffected, and owing to this circumstance, the veins themselves were highly prominent and easy to be distinguished from any other order of vessels. A process similar to that which had taken place in the veins of the lip and face, occurred

* See Plate III.

in those of the scalp, namely, exudation of a glutinous fluid, and incrustation in some instances—resolution and suppuration in others.

The incrustations became loose invariably on the application of a poultice, and quickly fell off. The interior of the vein was thus exposed, and a long, irregular, ulcerated cavity formed.

The vessels which were opened with a lancet emptied themselves gradually of their contents—pure laudable pus for the most part—and neither exudation of the thin gelatinous fluid nor ulceration took place.

On the 21st of April, skin cool, pulse 82, feeble but regular. 24th—the pulse had suddenly risen to 100, extremely feeble.

On the 6th of May the patient seemed to have had a shivering; it was however very slight: he had likewise vomited after his usual night dose of Syr. Papav. 8th—greatly excited after a dose of morph. hydrochloras gr. fs. 26th—the patient expired, perfectly rational to the last moment.

Autopsy.—The body greatly emaciated; on turning back the scalp, which was so fragile and perforated by ulceration that it tore, and yielded to the slightest touch, the diseased veins were seen, meandering over the internal surface, filled in some part of their course with a yellowish crumbling fibrinous mass, the smaller branches containing fluid blood of a pale colour, in minute quantity, and a single trunk of the temporal on the left side terminated in a foyer filled with laudable pus. On slitting open

those veins which, during life, appeared restored, or nearly so, to their natural condition, they were found perfectly empty, rough and irregular in their interior, apparently deprived of their smooth lining, and their calibre greatly increased. The shrunken attenuated muscles were cut into and examined in several parts of the body, but no deposits of pus could be detected. The lungs, liver, kidnies, and brain were in a healthy condition, but bloodless. The heart and larger vessels entirely empty. The joints were not examined internally, but they evidently contained no fluid. The patient had not complained of pain or uneasiness in the limbs, and had even walked across the room a few days before his death.

OBSERVATIONS.

It is unnecessary to trouble the Society with the opinions of Mr. Arnott, Dr. Lee, Mr. Travers, Cruveillhier, Velpeau, and others, who have written on the subject of Phlebitis. Their labours and valuable researches are well known to every member of the profession; I will merely add a few remarks, as they occur to me, on this very interesting, but probably not very rare affection.

The case in some slight degree resembled glanders, but this view of it was discountenanced by the habits and occupation of the patient, who was not aware of having in any way come into contact with horses or cattle suffering from that disease. At the commencement of the attack the local and general

symptoms reminded me of erysipelas occurring in weak and debilitated subjects; and that there is some resemblance, if not affinity, between erysipelas and phlebitis, one cannot doubt, since Velpeau, and many other able pathologists, have arrived at the conclusion that the former disease is nothing more than inflammation of the minute ramifications of the venous system. Does phlebitis bear the same relation to erysipelas as bronchitis to pneumonia—the relative size of the respective tubes constituting the chief anatomical distinction? There was no difficulty in distinguishing the present case from one of absorbent inflammation, the healthy and diseased veins being evidently in communication with each other during life, and the *post mortem* examination displaying a large vein, the trunk of which was seen to contain pus, and the branches blood.*

The general health of the patient had been very good up to the period of the illness in question; he suffered occasionally from piles; the saphenæ veins of both lower extremities were remarkably distended and varicose, and extensive patches of psoriasis existed in the same parts. The disease was ushered in by the mild symptoms of a common cold; there was neither violent shivering nor delirium; the countenance and pulse alone betrayed the gravity and importance of the attack, and these regained their ordinary tranquillity as the disease proceeded in its course; the skin was generally cool, and the patient seldom complained of thirst, and during the whole

* See Plate III., fig. 4.

period of the malady he was able to take light nourishment with appetite; nevertheless, the thinning process went on steadily from the very commencement of the disorder until its termination; leaving the patient emaciated to the highest degree, and almost bloodless. The inflammation did not spread rapidly like erysipelas over the parts which it was destined to attack; a portion of the vein, probably the space from one set of valves to another, became swollen, hard, and tender to the touch; the hardness remained five or six days, and was then almost suddenly succeeded by evident fluctuation, and on a lancet being plunged in, pus made its escape, and continued to flow several days; if the vessel were left untouched, a red spot appeared, then a moist, glutinous exudation, and eventually a crusty mass, rather like rupia; and when this crust was allowed to fall off spontaneously, the vessel was found sealed up, and the skin restored to its natural condition, or nearly so; but if removed by violence, or otherwise, an irregular opening into the vessel was disclosed; ulceration succeeded; the interior of the vein for a considerable space became an open ulcer; granulations then sprung up to form the parietes; and after death the calibre of many of the vessels was quite complete: but life had not lasted long enough to allow of the perfect restoration of the smooth, polished, internal tunic. At the period when the disease had reached the vertex, the processes of inflammation, exudation, ulceration, and reparation, were going on simultaneously in the

several vessels implicated. The vessels of the lip, nose, and eyelid, having passed through the above-mentioned stages, had regained their natural condition in a great degree. The veins of the forehead were covered with an incrustation. The inflammatory appearances had entirely subsided all over the scalp prior to the death of the patient.

CASES

OF

CANCEROUS OR MALIGNANT DISEASE

OF THE

SPINAL COLUMN,

WITH REMARKS.

By CÆSAR HAWKINS, Esq.,

SURGEON TO ST. GEORGE'S HOSPITAL.

READ FEBRUARY 23RD, 1841.

The Transactions of the Society contain several cases in which the bones were observed to have become softened, with a deposit of cancerous structure in their interior, so as to break from trifling causes, after having been in most instances affected by pain of a more or less severe character resembling rheumatism.* The neck of the thigh bone has been most observed, when in this morbid condition, but other bones also are liable to be so affected, and among them, those of the spinal column. There are, however, so few well-described examples on record, of cancer or other forms of malignant disease of this important part, that some account of the four following cases may perhaps be not without value.

* Med.-Chir. Trans., vol. xv. 186., xvii. 56.

Case I.—Sophia Green, æt. 39, was admitted into St. George's Hospital May 7th, 1834, under my care, having enjoyed good health till very recently, when several months' anxiety and fatigue in nursing her husband, who died a few days before her admission, had a good deal affected her; and during that time a cancerous tumour of one breast, which had been first observed two years previously, had rapidly increased. It was now ulcerated and very painful, with retracted nipple, and thickened skin, and the glands in the axilla and above the clavicle were enlarged, and very hard. She complained however quite as much of pain in the neck, which had begun about two months previously, the pain being in the cervical vertebræ chiefly, whence it extended round the neck and over the scalp, and all these parts were very tender to the touch. She had also a little difficulty and pain in swallowing, and was unable to move her head in any manner without great exertion, and the effort gave her considerable pain. Supporting her head and neck on the right side, as she lay in bed, was very painful, but she could not lie on the left side at all; probably some stretching of the parts being occasioned by the weight of her head on the pillow. If she tried to change her position, it was done by first putting both her hands to her head to support it; and pressing the head downwards by the hand occasioned much suffering. The centre of the neck appeared a little sunk forwards, as if the upper vertebræ had been depressed in that position.

The tenderness of the scalp was nearly removed by some small doses of Colchicum and Opium, and the pain in the vertebræ was somewhat lessened by a blister, but the symptoms just mentioned continued more or less till her death.

In the early part of June an immense number of cancerous tubercles formed in the skin around the breast, covering much of the abdomen, and thorax, and shoulder; and in the latter situation many of them had coalesced, so as to form a hard mass of considerable size. About the same time she began to suffer from obstinate constipation, with frequent vomiting, which continued for nearly the last six weeks of her life, and appeared to arise from a mechanical cause. During this time the breast ulcerated and sloughed extensively, till she was released from her sufferings on the 16th of July.

The breast and pectoral muscles, and cellular texture, formed a large mass of scirrhous tumour, which at one part reached to the intercostal muscles, and a central slough had contaminated the ribs also, two of which were softened by absorption of their earthy substance, and filling of the cells with bloody pulp, so as easily to allow of their being bent or cut. The cutaneous tubercles, and absorbent glands, and the fat surrounding them, were evidently of cancerous structure, and one of the glands contained some bloody purulent fluid. The body of the fifth cervical vertebra was very irregular on its surface, and was softened throughout with much enlargement of the cells of the cancelli, which were filled with a san-

guineous pulpy fluid; the two adjoining vertebræ showed a lesser degree of the same morbid structure. The uterus was healthy, but both Fallopian tubes were much dilated, and contained a thick brownish fluid; the ovaria formed two tumours of the size of an orange, and contained several cysts, the larger of which were filled by transparent fluid, the others by an opaque semi-fluid substance. These ovarian tumours were the immediate cause of death, as they filled the pelvis in such a manner as to obstruct the rectum, which lay in the angle between them, upon the sacrum; and their nature was probably malignant, as several of the lumbar glands were enlarged and pulpy.

In this case the cancerous change of structure was in an early stage, affecting only the cancellous texture, or nearly so, and influencing slightly the adjacent nerves; but not forming any tumour, and causing no alteration in the functions of the spinal marrow. The next case illustrates the further progress of the disease.

Case II.—Jane Hall, æt. 55, was admitted into St. George's Hospital for paraplegia, and remained under the care of Dr. Wilson for two months, after which she was tranferred to my charge, at the end of November 1839. It appeared that the right breast had been removed six years previously for cancer, I believe by Mr. Mayo, in the Middlesex Hospital, and the part had remained well till May of the present year, at which time some cancerous tubercles were formed in and around the cicatrix, and one or

two glands became enlarged and hard in the axilla. She experienced pain in both these parts, occasionally severely, but they did not ulcerate, or undergo any material change during her life; the spine and the parts below it being the seat of her sufferings, and the cause of her death.

About March last (that is, nearly two months before the return of the cancer in the skin and glands), she began to suffer much pain in the back, chiefly in the dorsal region, and in May she experienced some pricking sensations in the feet, soon followed by numbness and loss of sensation, and in a short time by loss of power over the muscles of the lower limbs, which nearly at the same time became affected by involuntary contractions; in July the bladder and rectum also became paralysed.

In November, when she became my patient, one spinous process in the back was just enough prominent to be fixed upon as the seat of the disease, but by degrees it projected so as to form an acute angle, with a considerable curve above and below it, the vertebræ being bowed forward somewhat in a semicircular form. She complained of constant and acute pain along nearly the whole spine, but especially at the angle formed by the sixth dorsal vertebra, and the pain was much increased by pressure about this part, or any where below it, and for a little way above that bone. The angle appeared to arise from loss of substance in the body of the vertebræ, without any apparent swelling around it. The only other local circumstance to be noticed was

that I sometimes thought I could feel a hard tumour in the abdomen, but in consequence of the extreme tension and hardness of the abdominal muscles, excited by any examination, it was difficult to be certain of the fact; it will appear probable, however, that the diseased state of the omentum, subsequently described, had really been thus felt.

Below the affected part of the spine all the functions of the spinal marrow were materially impaired, or to use her own expression when attempting to sit up, "she felt as if she was about to drop into two parts." The physiology of the spinal marrow was therefore so well illustrated by the following interesting pathological symptoms, that perhaps an account in detail may be justified, in a case where the structure of the medulla was wholly unaffected.

First, with regard to *muscular power*. This faculty was totally lost, as to the will, in every muscle of the limbs, or loins, or abdomen, as well as in the sphincters of the bladder and rectum; but many of them were in an almost constant state of tonic spasm, while there were also occasionally convulsive or clonic spasms in the same or other muscles of the limbs and abdomen. Thus the abdominal muscles were so permanently contracted as to curve the body forwards, and present rigid masses to the fingers, the pressure of which increased their hardness, and painful spasms took place also in them, either by themselves, or at the same time that the limbs were contracted. The hips and knees were almost always in a bent position, the thighs nearly

in contact with the abdomen, and the heels nearly upon the nates, but the limbs also jumped a good deal, particularly at night. The feet and legs did not much participate in this tonic spasm, nor in the occasional convulsions, and their muscles did not act nearly so much from external impressions, such as pressure, or pinching any part of the limbs, or tickling the soles of the feet, which readily excited the actions of the muscles of the hips and knees. The tonic action of the limbs was trifling, so that they could be elongated with very little resistance, and would lie flaccid for a few seconds, after which they would suddenly be drawn up again, and every movement of this kind was accompanied by the most excruciating pain. For about a fortnight on one occasion she was much relieved by having the limbs kept in the extended position by fastening the feet to the foot of the bed, but the spasms which then took place in this new posture became worse than those before experienced, so that she was allowed to have them again at liberty.

The loss of power over the sphincter ani generally caused an involuntary escape of fæces, without consciousness of their passage; the bowel itself was usually weak in its expulsive power also, but now and then there was less constipation, so that, even as late as March, she was sensible of an inclination to empty the rectum, and could voluntarily call its muscular power into action to expel its contents, the sphincter being at the same time paralyzed, with insensibility to the discharge.

The sphincter of the bladder was paralyzed, so that there was invariably an incontinence of urine, but the detrusor never lost its power, so that there was no partial retention, as is so often the case in paralysis. She was at the same time wholly unconscious of the escape of the urine, and had no voluntary power over the detrusor, such as was just remarked to have been sometimes present in the coats of the rectum.

Secondly, the *sensibility* to external impressions was entirely lost in every part below the back, so that she could not feel smart pinching or pricking, or heat or cold, in any part, and was also (as was just remarked) destitute of sensibility about the two outlets of the bowel and bladder. Sometimes she thought she felt a little when pinched in the thighs, but I believe it was only when muscular action was excited by the stimulus. But though destitute of common sensibility, violent pain was caused in every part by spasm, either spontaneous or excited, and she felt severe pain occasionally in the limbs, when no contraction was present, but still more in the abdomen, the pain in which was said to be an agonizing and burning pain, and was almost always complained of, and perhaps depended partly on the morbid changes of the internal parts, which are less dependent than the parietes for their sensation on the nerves passing to them from the spine below the seat of the disease.

The acute pain thus experienced below where the spinal marrow was nearly deprived of its functions

is often called *increased sensibility*, for example, by Dr. Abercrombie, and MM. Serres and Ollivier, in speaking of this subject; but the parts thus painful being utterly destitute of common sensation, the expression seems to me to be an erroneous one for such acute morbid impressions.

Thirdly, the *temperature* of every part below the disease appeared to be permanently higher than the upper half of the body; the difference being about four degrees between any two parts, that appeared fairly comparable with each other, after allowing for the warmth of clothing and other circumstances.

Fourthly, the *secreting* properties of the intestines and kidneys were rendered morbid, so that besides the constipation and involuntary escape of fæces from want of muscular power, the evacuations were almost always very fœtid and offensive, and generally dark coloured, though in some measure under the influence of mercury; and the secretion of urine was permanently alkaline. This fluid was, however, pale and clear, and free from mucus or albumen, so that it was not alkaline enough to irritate the mucous membranes of the bladder and kidneys; nor could it be said (as is generally supposed with regard to the alkalescence of the urine after injuries of the spine,) that the urine became alkaline because mucus was secreted by the urinary surfaces, since the urine was, in this case, always alkaline, though without mucus.

Lastly, the circulation and nutrition of the parts below the disease of the spine were impaired in the

manner usually observed in injuries or diseases of the spine, so that there was from the beginning of 1839 a disposition to the formation of sloughs over the trochanters and sacrum, or in any part in which pressure was made, together with œdema of the legs, and the appearance of bullæ on the skin.

With such symptoms as these connected with the spinal marrow, sometimes a little remitting in severity, but on the whole advancing, this patient lingered on till June 17th, 1839, when the mortification became very extensive on the hips and nates, and was the immediate cause of death, as is usual where the spinal functions are wholly lost or seriously impaired.

It is unnecessary to dwell on what was done to alleviate an evidently fatal malady, but it may be as well to mention that what appeared to afford most relief was an occasional blister to the spine, or a belladonna or opium plaster, and sometimes dry cupping along the back, together with opium frictions on the painfully-contracted abdomen and limbs; and stimulants to the parts whose vitality was much lowered, so as to inflame and slough; with different narcotics internally, particularly the bimeconate and acetate of morphia.

On examination of the spine by removing the spinous processes, all the vertebræ were found to be unusually soft and vascular, and there were seen in the section of several of the dorsal vertebræ spots or tubercles of yellowish white substance, similar to that found in larger quantities in their bodies. On

opening the sheath of the spinal marrow, a little clear water was seen below the arachnoid membrane, but the whole medulla was of its natural colour and consistence, and presented no appearance whatever of inflammation. Opposite to the sixth dorsal vertebra it had been pressed upon by a tumour projecting from the body of the bone, so that a deep sulcus of the entire circle was formed, in which so little medullary matter was left that the central part was almost transparent: the part thus pressed upon was full half an inch in length, though it has contracted by spirit in the preparation.* Even in this point, however, there appeared to have been no inflammation whatever.

Opposite to this part some firm structure without bone projected from the body of the sixth dorsal vertebra in the form of four oval prominences, so as to encroach considerably on the canal; three of these were covered by the dura mater in firm union with the morbid growth, but over the other an opening was formed in the membrane with smooth edges, through which the new growth appeared, the opening being the result of simple absorption without any ulceration. On making the section of the vertebræ seen in the preparation, the morbid growth was found to proceed from these vertebræ, the sixth or central one being most altered in shape, though all three of their bodies were almost entirely con-

* The preparations illustrating these cases, which were shown at the Society, are either in my own, or the Hospital collection at St. George's Hospital.

verted into a cancerous substance; the sixth having spread out posteriorly, while it was much compressed in front, the fifth and seventh vertebræ almost coming in contact, an acute angle was thus produced, which made the spinous process of the sixth so prominent during life. The projection into the canal was about half an inch beyond the line of those vertebræ which had no external growth; in several of the other vertebræ, however, cancerous substance had been deposited in the form of tubercles in their cancelli. The new growth was firm, with fibrous structure of a white appearance in bands, with some yellow softer substance in the interstices. Many of the other bones of the body, and the other parts of those in which the cancerous tubercles were seen, were softer and more vascular, and with larger cells than usual, with reddish pulp in their cancelli.

The lungs were healthy, but the pleuræ were every where closely adherent, so as to form a thick layer of very hard substance, which had more the appearance of cancerous membranes than of simply inflamed pleuræ.

The abdomen contained a small quantity of serum, and almost the whole of the peritoneum was covered by small cancerous tubercles, in no part going into any viscus; they were hard and close set, of the size of grains of wheat, but a few were a little larger. They were most numerous on the diaphragm and small intestines, and many parts of the bowels were matted together by adhesion of these

tubercles, especially about the head of the colon and the ileon. The omentum was changed into a hard scirrhous band about an inch broad, and half an inch thick.

The peritoneal surface of the uterus and adjoining parts was much altered by the tubercular deposit, and in the body of the uterus was embedded a small cancerous tumour the size of a pea.

The axillary glands were of well-marked scirrhous character, with bands going far into the surrounding fat; the cancerous cicatrix and cutaneous tubercles did not affect the muscles below them.

These two cases appear to have been good examples of cancer occurring secondarily in the bones of the spine, and seem to show pretty fairly two different stages of the disease.

I am only acquainted with three recorded cases of cancer or scirrhus, as distinguished from the medullary and fungous varieties of malignant disease. Two of these are briefly alluded to in the published lectures of that distinguished ornament of this Society and of our profession, whose loss we have so recently had reason to deplore.* In one of them scirrhous tubercles were found in the cancelli of several vertebræ after agonizing pains in the back;—in the other, it is remarked that tubercles were found adherent to the spine, I presume not in the interior; the spine is also said to have been dis-

* Sir A. Cooper's Lectures, small edit. p. 349.

torted, and to have caused more suffering than the disease of the breasts. Both these cases therefore resemble the first which I have described: there is, however, a third case which has been published by our president,* in which, as in my second case, the spinal marrow was implicated. In all the five instances cancer of the breast was the primary disease.

In Sir B. Brodie's case several vertebræ were converted into a gristly substance possessing considerable vascularity, without earthy matter, and the whole of the lower part of the three vertebralis was filled with serous fluid. The effects upon the spinal marrow were in many respects different to my case, the lady being suddenly seized, two months before her death, with paraplegia and loss of sensibility below the back, without appearing to have had preceding pain; nor is pain mentioned as having afterwards been present. She was subject, as Halls was, to involuntary convulsive movements, but these also were unattended with pain; the patient only complaining that it was disagreeable to see them. The urine in this patient, after being at first clear and natural, became ammoniacal as in Halls, but was also loaded with offensive mucus, and deposited phosphate of lime; and there was the inflammation and dilatation of the urinary organs usually present when the spinal marrow is seriously affected, but from which latter effects my patient

* Brodie on Diseases of the Joints, p. 283.

was free. As a diagnostic sign of cancer of the spine, acute pain cannot therefore be regarded as *invariably* present, but in all the other four cases it appears to have been most excruciating; I never saw evidence in any other disease of the spine of such exquisite suffering as in my two cases; and as pains have generally been noticed as having preceded fracture of the femur or other bones, when affected with cancer, the practical inference may perhaps be legitimately drawn, that rheumatic pains much complained of in the spine, should usually contraindicate the performance of an operation for cancer of the breast or other organ. In Green's case the acuteness of the pain and tenderness, and the manner in which certain nerves of the head, throat and neck were affected, enabled me some months before her death to anticipate cancer in the vertebræ; and in Halls' case also, the same circumstances, together with the degree, and in some measure the peculiar manner in which the functions of the spinal marrow were interfered with, left no doubt in my mind of there being cancer, although the angular curve made the local appearance not unlike that of caries. The angle was quite acute enough for considerable loss of substance, but the vertebræ above and below the projecting spinous process were a little more curved forwards than is usual in caries, which a little assisted the diagnosis; this circumstance arising perhaps from the softening of the bones, or partly also from paralysis of the posterior spinal muscles.

I could not indeed tell that there might not also be some alteration of structure in the spinal marrow or its membranes, besides that of the bones, (which was rendered certain by the acute angle of the spinous process,) since the symptoms connected with the medulla were such as might be occasioned by any cause that interrupted the communication of the lower half of the body with the sensorium, whether situated within the spinal marrow, or external to it.

Of the treatment of an evidently incurable disease in both cases, it is unnecessary to say more than has already been done.

In all these cases the malignant disease of the spine was secondary to cancer of the breast, and there seems to be no doubt, from general testimony, that although medullary and fungous tumours not unfrequently originate in bone, ordinary cancer or scirrhus on the other hand is at least very rare without preceding cancer of some other tissue. The following case affords an instance of *primary malignant disease* of the spine, which corresponded much more with cancer, in the appearance and symptoms, than with medullary tumour.

Case III.—The subject of this case was a gentleman, seventy-four years of age, who came to town in August last, and was for a few days under Sir Benjamin Brodie's care, after which he was chiefly under the charge of Mr. Keate, with whom I saw

him, and in his absence from town I attended to him, and also examined the disease after death. I am indebted to both my colleagues for permission to make use of their observations of the case in addition to what I learnt myself from the patient.

This gentleman, after sitting near an open window in cold weather, in the spring of 1840, began to feel pain on the left side of the neck, extending from the head to the shoulder, with numbness of the left side of the head. The pain was like that of rheumatism, and never subsided after its first appearance, and in about a month was succeeded by a swelling on the left side of the neck. Both pain and swelling increased, and in July, about four months from its commencement, the pain became more severe and burning, and both pain and swelling extended to the right side of the neck. When he came to town at the end of August, the pain was most severe on the right side, where a spot of the size of half-a-crown, about the middle of the neck, near the vertebræ, was affected with most excruciating pain; the pain every where was severe, but he said he could bear the rest tolerably well, if this part was relieved. I saw him first after he had been nearly three weeks under treatment, (mercury and iodide of potassium, with leeches and cold lotions, chiefly,) by which some diminution of the swelling and of the pain was effected.

In the back of the neck was a good deal of swelling, of a firm elastic character, appearing to be below the muscles, but now and then giving an ob-

scure sense of deep fluctuation ; the swelling on the left side of the spine reached from the head to the level of the fifth cervical vertebra, and on the right was opposite only to the second and third bones, projecting chiefly at the sides, so as to leave the sulcus of the spinous processes in some measure perceptible. This swelling was very tender, as well as painful, without adhesion to the skin, or alteration of its colour. Every attempt to move occasioned very great suffering, so that it was difficult for him to find a tolerably comfortable position for the head to lie on a pillow ; no movement whatever was performed, but by the head with the whole body, and any attempt forcibly to rotate the neck could not be borne for an instant ; pressure on the head downwards produced also much increase of suffering. The pain was constant, but liable to occasional increase, it prevented sleep, and required the free use of opiates.

The tumour at one time lost perhaps a third of its bulk, but this subsequently varied, in consequence of occasional attacks of increased pain and swelling, as if suppuration threatened, and this chiefly on the left side. A blister and an iodine lotion appeared somewhat to increase the tumour, and although it never returned to its former size entirely, yet the pain latterly was almost as severe as ever.

After his journey to town in August, he felt for a day or two a tremulous action of the muscles on the fore part of the thighs, but this did not return.

About three weeks, however, before his death, his left arm became nearly paralysed, and the power over the left leg was slightly impaired, his senses being the whole time perfect.

During most of the time the general health was little disturbed, but latterly he suffered a good deal from salivation, and became thinner and weaker, and thought himself in danger, and during the last three weeks, in the last of which he had severe diarrhœa, his strength gradually failed, in consequence of which Dr. Seymour was consulted, who was present at the examination on the 25th of October, in which I was assisted by Mr. Prescott Hewett.

The swelling was composed of a firm solid tumour, which occupied the place of the third cervical vertebra, and in part the second also, with a considerable portion of the adjacent ligamentous, tendinous and muscular substance, the distinction between what had been of osseous, and what of soft structure, not being clearly perceptible. The new structure occupied the whole of the arches and processes of the vertebræ, and in part their bodies also, so that scarcely any part remained osseous except the processus dentatus, which was by the softening of its base so moveable, that there must have been some risk during life, of its being torn away from its attachment. Some of the new structure had encroached on the vertebral canal on the left side, between the dura mater and the first and fourth vertebræ, the tumour adhering slightly to the membrane ; and within it was a good deal of thin serum,

but the medulla itself was not unusually vascular. The brain also was healthy, with the exception of some serum effused under the arachnoid of the cerebrum.

The tumour was white and lardaceous in appearance, and softest in the centre, where the bone originally existed, which part was also more vascular than the outer part, which had been formed by the softer tissue around the vertebræ; on the left side, where the natural texture of the muscles began to be evident in union with the morbid growth, was a small quantity of dark, bloody pus. In the liver, which was otherwise healthy, were two tubercles of the same white texture as the tumour, but a little firmer, and less lardaceous; one of these was on the surface, and of the size of a walnut; the other was in the interior, and a little smaller. The kidneys and other viscera, both of the abdomen and thorax, were healthy, except that the intestines were blanched by the diarrhœa.

This case differs from the preceding ones in the formation of an external tumour, in consequence of the growth being chiefly in the arches of the vertebræ, instead of their bodies, and in the contamination of the adjoining parts. The same excruciating pain, however, attended this primary disease of the bones, which was present in most of the preceding instances of cancer following malignant disease of other textures. Its malignant nature was evident in the texture of the tumour, and of the tubercles of the liver, and on the whole it appears to

me to have been nearer to scirrhus than to the fungous forms of malignant deposits.

Except, however, the acuteness of the pain, there was no circumstance which marked its character during life at all decisively;—it might have been caries with much chronic thickening of the adjacent parts, and slow suppuration, to which the trifling purulent secretion actually present gave it much resemblance; it might have been disease of the bone, with swelling from scrofulous or tubercular deposit, though the age was against it; or it might have been like a fatal case of organized deposit (from rheumatic inflammation likewise) related by our president,* which does not seem (as the preparation shows) to have been either tubercular deposit or malignant matter. Some suspicion of its real nature was sometimes entertained, but the case was confessedly too obscure for any one to pronounce a positive opinion.†

* On the Joints, p. 309.

† It appears to me that some of the cases occasionally published as instances of malignant disease of the spinal meninges, or other parts around, are really instances of scrofulous or tubercular disease, or of simple organized deposit, like those above referred to. See, for example, the excellent article recently published on cancer in the Cyclopædia of Surgery, in which Dr. Walshe quotes as an example of "Encephaloid growth protruding externally from the spinal canal," a case of Dr. Knox's, (London Medical Observer and Enquirer, Vol. 3, p. 160,) in which, however, the author himself describes the two bodies in question as being, one like a scrofulous gland, and the other as bloody pus, and which therefore I should regard as not being of malignant character. The truth

Case IV.—The next case differed materially from either of those previously described, in the age of the patient, and in the origin of the disease, as well as in the appearance of the tumours. The subject of it was under Sir Benjamin Brodie's care in St. George's Hospital, who has kindly allowed me to relate its history, for some particulars of which I am indebted to Mr. Tarrant, our present house-surgeon, who was then Sir Benjamin's clinical clerk; but I also saw the child repeatedly during life, and was present at a careful *post mortem* examination, which neither of those gentlemen witnessed.

Charles Gilson, æt. 4, was admitted October 30, 1839, with a firm inelastic tumour, distending the left nostril, of a reddish ash colour, which was attached to the outside only of the nostril, the skin and cartilage being much distended, and the tumour beginning to spread over the jaw under the muscles. It had begun about four months previously, in consequence of a blow, which had caused considerable hæmorrhage, and the tumour, which had been of late increasing more rapidly, had bled repeatedly. The general health was as yet unaffected, and therefore, although the disease was evidently malignant, it was determined, on consultation, that the tumour should be removed, together with as much of the maxillary bone as appeared to be implicated. In

is, however, that all verbal descriptions, and even many drawings and preparations of morbid structures, convey very imperfect ideas of their nature to those who have not themselves been witnesses of recent appearances.

the operation, it seemed probable that it did not protrude from the antrum, and Sir Benjamin therefore contented himself with destroying, by means of chloride of zinc, all the surface to which it was attached. The section of the tumour shows a firm gristly or half cartilaginous texture, with a slightly reticulated appearance in the centre, where it was most vascular.

From Nov. 9, when the operation was performed, till the end of January following, when the child left the hospital, the health continued good, and there was only, as it appeared, some dead bone to exfoliate. On February 19, however, he was re-admitted, looking pale and anxious, and scarcely able to move any of his limbs, in which much pain was felt. The abdomen was large and tender, there was a good deal of fever, and the nostril was full of tenacious mucus, with some coagulated blood. It appeared that he had had a fall a fortnight previously, since which his nose had bled profusely on several occasions, and he had rapidly declined in health, and the right hip, on which he was supposed to have fallen, was painful and tender.

After his admission, the paraplegia increased, as to the muscular power, but the sensibility was not lessened, nor was there any sloughing of the lower part of the body ; and somewhat later there was incontinence of urine and fæces.

Some bleeding continued to take place from the nose, with sloughing of the cheek, by which a large part of the maxillary bone was exposed, and its

vitality destroyed, and in March, some glands behind the left ear enlarged considerably, and a tumour was felt at the extremity of the sternum. The general strength gradually declined, with much irritation from the gangrene of the face, and the child finally sunk on the 12th May 1840, but without any loss of mental power.

The parts about the head had undergone much alteration; the maxillary bone was softened in the interior, and the antrum filled with soft medullary matter; the æthmoid and sphænoid bones were similarly changed, as well as the dura mater lining them, and the cells were obliterated by the morbid structure. Some new growth occupied the sphænoid fossa, and a portion coming into contact with the periosteum under the zygoma, the disease of the outer membrane had produced a hole through the temporal plate of the sphænoid bone, so as to project through it into the cranial cavity. The brain itself, however, was healthy.

The tumour at the end of the sternum had been formed all round the ensiform cartilage and adjacent bone, the cartilage itself being unchanged in the midst of a solid semi-cartilaginous mass, of the size of a large walnut, and of a yellowish white colour. A great many similar tumours existed in many other parts of the bones, which were almost every where confined to the periosteum, so that they could generally be easily separated from the bones by tearing off their investing membrane; the largest of these was on the inside of one ilium,

and was three or four inches in diameter. They were most numerous along the front of the vertebræ, and on the ribs; and sections of the dorsal vertebræ showed that in several of these bones the new structure had spread into the cancellated texture, the outer shell being absorbed; and in the osseous tissue, as in the cells of the nose, the morbid growth was diffused and softened, so as to resemble medullary tumour, while all those of the outer part of the bones or cartilages were firm, and like fibrous cartilage in appearance; the intervertebral substances were wholly unchanged. Much new growth had also spread between all the processes of the vertebræ, and several masses of some size were formed on the posterior part, and, in one section, the dura mater was thickened by new growth, but smooth on its inner surface. The appearance of the medulla spinalis in its recent state was unfortunately not observed; as far as can be observed, however, in its present condition, when hardened in spirit, it seems to have been irregularly pressed upon by the morbid growth within the spinal canal, but not to be otherwise altered in texture.

The vertebræ most affected were those of the back, which have been preserved; and from the tumours in front of these bones, a great mass of similar hard or cartilaginous appearance, and apparently of globular portions united, projected forwards in the centre of the chest, whence it extended into the root of each lung, the texture of which was thus mixed with divided portions of the general mass; and in some parts towards the circumference of the

lungs, and under the pleuræ, were separate tubercles of similar hardness and appearance to those in the periosteum. No tubercles were observed in any of the other viscera; but the number existing on all the bony parietes of the abdomen accounted for the fullness and tenderness of that part during life.

In this case the exact origin of the morbid structure in the nose cannot be determined, whether it were in the mucous membrane, or in the periosteum, or osseous tissue; nor, indeed, whether it began in the nostril or in the antrum. From the healthy structure of the mucous membrane around the tumour, and from the periosteal origin of the tumours of other parts of the body, I am inclined to believe that the periosteum of the maxillary bone was the primary seat of the disease, and perhaps it may have begun nearly at once both in the nostril and antrum, as it did in both surfaces of some of the other bones, and as it often does in what are called malignant polypi.

Although hard and cartilaginous, the tumours had not the usual appearance of the scirrhous or common cancerous form of malignant disease which is so seldom found at such an early period of life; their fibrous and semi-cartilaginous appearance may be accounted for, perhaps, according to the usual laws of morbid growths, by the tumours having originated in the fibrous tissue of the investing membranes of the bones and cartilages of a young

child. The morbid structure in the softer mucous tissues of the nasal cavities, where the less resistance would make it increase more rapidly, has, however, the common tissue of medullary tumour of such parts. If, then, the whole disease be regarded as of this type, the great contrast it affords to the tortures of the preceding cases in the nearly entire absence of pain in the vertebræ of this child, and in the other tumours which were perceptible, will be in accordance with what is usually observed in scirrhous and medullary diseases, compared with each other previously to the changes of ulceration. The acute pain in the limbs in this case, as was observed in the preceding cases, is not a diagnostic sign of malignant disease in the back, but only of pressure or irritation of the spinal marrow, from whatever cause it may arise; so that the cause of the paraplegia was rendered probable only by the existence of other tumours elsewhere.

I am inclined to think, from scattered notices, that encephaloid and hæmatoid varieties of malignant disease may be more frequent than scirrhous forms of morbid structure in the vertebræ, although I have only the last case to relate upon this subject. For example, in the Museum of Guy's Hospital are two instances of fungoid disease, in one of which the lumbar vertebræ are said to be crushed and affected with this morbid change in consequence of a violent effort, and in the other several of the dorsal vertebræ, as well as many of the other bones of the body, had tumours of this character formed in

them, which implicated the medulla spinalis and its membranes, and induced paralysis.* Again, in a case published by Sir B. Brodie, in his work on the Urinary Organs, he has informed me that there was malignant disease of the spine of this character, although it is not there alluded to.

If, however, we exclude those cases in which the authors themselves express doubts of the nature or origin of the disease, or in which a careful perusal leaves uncertainty as to these points in the mind of the reader, it will be found that there is an equal dearth of well-described cases of the other forms of malignant tumours of the vertebræ, as there is of the scirrhous form.

Malignant diseases having only been clearly distinguished in recent times, it is only in modern works that we can expect accounts of such cases; but of modern works professing to treat of the diseases of the spine, no one alludes to the subject except Sir B. Brodie, in the case of cancer already quoted; and in works which treat of the affections of the spinal marrow, such as Ollivier, Serres, Abercrombie, and others, no satisfactory case is detailed. Dr. Abercrombie indeed remarks, that "fungoid disease of the spinal cord occurs in connection with disease of the vertebræ," and says that several cases of the kind are related in Ollivier. In reality, however, Ollivier's work only contains three cases in which fungous disease, partly affecting the bones, was supposed to exist: in the first of these, which

* See Catalogue, Nos. 1,037, 1,038, 1,027, &c.

is quoted from Serres,* the deposit on the dura mater, with slight alteration of the vertebræ, was probably scrofulous; "semblerait se rapprocher de la matière tuberculeuse ramollie" is the expression of Serres himself. In a second case quoted from Wolf,† a child, ten years old, after a fall, had several vertebræ affected with medullary disease, forming external tumours in the back and loins, with paraplegia. And in a third case, quoted from Lecat,‡ several lumbar vertebræ were converted in part into a malignant growth, in a man who had also met with a fall, and the patient died two days after an unsuccessful attempt to extirpate the tumour.

These cases, however, have been classed by Ollivier§ and by Dr. Walshe,‖ among the cases of medullary disease of the spinal meninges; although I think it just as probable that the morbid growth may have originated in the bones, and spread secondarily to the membranes of the spinal marrow, as in the case I have related. Such may also have been the fact in a case related by Phillips,¶ and quoted by Dr. Abercrombie as medullary disease of the spinal meninges, in which a boy of fourteen, three years and a half after a fall, was attacked with violent pain in the back, thighs and legs, followed

* Journal de Physiologie Exper., Juillet 1825.

† Bull. des Sciences Med. de Ferussac, Janvier 1826.

‡ Traité de l'Existence du Fluide des Nerfs, &c.

§ Ollivier Traité de la Moelle Epinière, pp. 490, 737, 745.

‖ Art. Cancer, Cycl. of Surgery.

¶ New London Medical Journal, vol. i.

by paraplegia, with a tumour of large size in the loins, subject to frequent hæmorrhage; besides the medullary tumour, said to have originated in the cord, several of the vertebræ are also said to have disappeared with softening of the sacrum and ilium, as well as of those bones.

These three cases may therefore have been medullary disease of the bones in the first instance, spreading to the dura mater, which I have no doubt was the cause of the disease in the fourth case I have related; but besides these instances, of which a different view is taken by the authorities I have alluded to, I only know of two good cases of this fungous form of malignant disease of the vertebræ which have been published, both of which are to be found, with plates of the disease, in Cruveillhier.* In one of these cases, a woman, forty years of age, came under notice, with enlargement of the abdomen; and a very large cancer, as he calls it, (doubtless fungous disease,) of the breast. Three or four months afterwards she was again brought to the hospital in consequence of fracture of the middle of one thigh bone, and while this was being bandaged, the upper part of the other thigh also broke, and she died in the following week. The drawings of the diseased parts show several white tubercles, apparently medullary disease, in the cancelli of both thigh bones, in many places besides those which had broken; and numerous tubercles in the vertebræ, which were chiefly in their interior, but some had

* Livraison, xx. pl. 1.

made their way externally by absorption of the shell. It does not appear, however, from the history, that the spinal marrow was in any way affected. There were also tubercles in the cranium, some in the diploë, some raising the dura mater only, and others both dura mater and pericranium. The liver contained a multitude of tubercles, and so also did the pleuræ and peritoneum. The tumours are said to have been white and resisting, with much cancerous juice in their composition.

Cruveillhier's second case was in a young man of twenty-seven, whose testis was removed for medullary disease, six months after which he was seized with acute pain in the sides of the chest, and difficulty in raising his arms, then with pains in his shoulders, and afterwards palsy of the lower extremities. There was an encephaloid tumour of the seventh dorsal vertebra, which was entirely destroyed by it, as well as part of the sixth vertebra, the intervertebral cartilage between them being unaffected, and a tumour of the same kind was commencing in the fourth vertebra, and in the posterior extremity of the first two ribs. No disease was found elsewhere, and the condition of the spinal marrow is unnoticed.

A CASE

OF

SLOW PULSE WITH FAINTING FITS,

WHICH FIRST CAME ON TWO YEARS AFTER AN INJURY OF THE NECK FROM A FALL;

WITH OBSERVATIONS.

By T. H. HOLBERTON,
HAMPTON,
SURGEON EXTRAORDINARY TO THE QUEEN DOWAGER.

READ MARCH 9TH, 1841.

A GENTLEMAN, aged sixty-four, in December 1834, whilst hunting, fell from his horse on his head, with his chin thrown violently on his sternum. He was stunned, and on recovering himself, he said that he "had broken his neck." He was attended by Mr. Dix, of Long Buckley, in Northamptonshire. He complained of general soreness and stiffness, and of great pain in the neck about the cuneiform process and condyles of the os occipitis. He was helpless and could not move in bed, and was totally unable to rotate the head. He was cupped, &c., and the head supported by an air-collar.

The pain in the neck continued about six weeks.

At the end of three months he was enabled to be removed to London, and was seen, I believe, by Mr. Keate. Mr. Dix saw this gentleman about a year afterwards, looking very well, and in excellent spirits, but still complaining of a difficulty in moving the head.

There was no further particular observed in this case until January 1837, when he had a fainting fit, whilst walking out. Mr. Jackson of Stamford was sent for, and he found the pulse at twenty in the minute.

In the same year, after having been at the Spring races at Newmarket, and excited, and having fasted for several hours, this gentleman had a second fit.

In the following June, after a similar excitement, he had another attack. At this time he was attended by Dr. Mitchell, and his pulse was then twenty-five in the minute.

When I first saw this gentleman in March 1837, his pulse, when he was free from excitement or casual disorder, was thirty-three, but it was easily altered. Mental excitement usually increased it, and, in general, this was followed by a corresponding slowness of the pulse, and often by a fainting fit; and a sudden rise of the pulse, or even a gradual increase above the point, that might in his state be called his healthful standard, usually indicated mischief, and was found to be a bad symptom. Costiveness, and disorder of the stomach and bowels, always affected the pulse, by increasing or diminishing it, and were the most invariably exciting

causes of a fainting fit. Gout, to which he was very subject, was another cause.

The general character of the pulse, when he felt well, and was free from disorder, was firm, full, and free; sometimes quite regular, sometimes intermittent.

The attacks increased in frequency as well as in degree, as time advanced, and the first most severe and alarming *succession of fits* occurred in June 1838. On the previous day, this gentleman had eaten heartily of a variety of substances at his dinner, and on the following day about one o'clock P.M., syncope came on, and a succession of fits continued till half-past six or seven in the evening, with intervals of one or two to fifteen minutes between the attacks. I gave him brandy and other stimuli, without stopping or even abating the fits; on the contrary they seemed to increase the mischief, for they made him sick, and disordered his stomach. His pulse on this occasion sunk considerably; it chiefly ranged between twenty and fifteen per minute, but at times it fell to twelve, ten, nine, eight, and at three or four different times when the patient was quite sensible and not in a fit, I counted his pulse as low as seven and a half in the minute. Dr. Mitchell on a subsequent occasion also observed this very low state of pulse, as did Mr. Cullen, who was then acting as my assistant.

If the finger were placed on the radial artery, the approach of a fainting fit might always be known, sometimes for a second or two before it manifested

itself by any change of the countenance. The pulse would cease before the syncope took place; and the fit would continue till the heart again beat, when the face would redden and consciousness return with a wild stare and occasionally a snorting, a slight foaming at the mouth, and a convulsive action of the muscles of the mouth and face.

The frequency of the attacks was uncertain. Sometimes the patient would have two or three in a day, sometimes one in two or three days, at other times one in a week: sometimes one in a fortnight, or three or four weeks. Sometimes the fit would be severe and all consciousness be lost, at other times there would be a mere threatening or giddiness.

Stimulants, nervous and antispasmodic medicines, were had recourse to, for the purpose of warding off the attacks, but without any marked advantage, and the treatment that was found at length to be the best, consisted in carefully regulating the bowels, preventing the formation of acid in the stomach, giving a plain nutritious diet, with three or four glasses of wine a-day, or a proportionate quantity of brandy and water.

As before stated, the frequent exhibition of stimuli not having the desired effect of stopping the attacks, but rather being productive of injury by exciting the system and disordering the stomach, the treatment that Dr. Mitchell and myself found to be the best, during a fit, was simply to fan the face, apply Eau de Cologne, &c., to the nostrils, forehead,

and temples, and, if there were a disposition to a continuance, to give coffee or tea.

The most severe single attack this gentleman had, except the one which destroyed him, occurred at his dinner, about six months before his death. He had hastily eaten a mutton-chop, and was taking a second, when he was suddenly seized, and was, to all appearance, for a few seconds, dead.

His last attack, in April 1840, occurred also at his dinner, and was attended with no convulsive movement or other symptom, either in character or degree, that had not been noticed in the previous fits ;—it differed only in its termination.

The body was examined by Mr. Liston and Mr. Ancram thirty-six hours after death, in the presence of Dr. Mitchell and myself.

MR. LISTON'S REPORT.

Chest.—Lungs healthy. Heart large. The parietes of the left ventricle rather thin. The lining membrane was much thickened generally. The left auriculo-ventricular opening was rather enlarged, and admitted three fingers very easily. The valves of the aorta were healthy. The lining membrane of the right ventricle was slightly thickened in several places. The right auriculo-ventricular opening was extremely large, and admitted the points of four fingers and thumb. The valves of the pulmonary artery were quite healthy.

Head.—The dura mater was very firmly united

throughout its whole extent to the cranium, which was dense and unusually thin. There was a large quantity of serum contained in the cavity of the arachnoid. The substance of the brain was slightly congested. It was in other respects perfectly healthy. The medulla oblongata was small in size and extremely firm in consistence. The foramen magnum was altered in shape. The antero-posterior diameter much diminished. The superior part of the odontoid process of the axis appeared to have been pushed back, and somewhat raised above its usual situation. The antero-posterior diameter was so much narrowed that it would not admit of the little finger. The dura mater and ligament covering the posterior part of the body of the axis, were very much thickened. The atlas was in its usual situation, but the articular cavities were firmly ossified to the condyles of the occipital bone, and permitted no motion whatever between the atlas and skull. There was a slight unnatural projection on the lamina on the right side, between the spinous process and articular process of the axis.

No ossification or calcareous deposit was found in any part of the vascular system. The blood was in a fluid state.

The pneumogastric nerves were large, and the middle cervical ganglion of the right side was unusually developed.

In tracing the history of this case we cannot but be struck at the slow development of the symptoms,

as bearing connection with the state of the parts found on dissection; the first fit not occurring till two years after the accident, and death not produced till upwards of five years after the fall.

The injury to the occiput and to the first and second vertebræ at the time of the fall, must have been very great, though insufficient then to cause any visible effect on the functions of the spinal chord.

Inflammation, however, followed, and a consequent thickening of the ligaments, which narrowed the foramen magnum and upper part of the spinal canal, and thus affected the medulla oblongata and upper part of the spinal chord, diminishing the size and increasing the density of these parts.

This gentleman was enabled to ride on horseback until the fits came on, though with caution, and at a slow pace.

He never had paralysis, nor alkalescent urine, but was during the last three or four years of his life liable to cold feet and general chilliness. He never, after the first few weeks from the accident, suffered pain in the neck, and his spirits, when he was free from attacks, were excellent, and his general health often very good.

MEMOIRS

ON SOME

PRINCIPLES OF PATHOLOGY

IN THE

NERVOUS SYSTEM.

By MARSHALL HALL, M.D., F.R.S. L. & E., &c.

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MEMOIR IV.

On the Plan of Observation of Diseases of the Nervous System.

I HAVE been much struck by an observation of Sir J. F. Herschel, which, however different the occasion on which it was made, is not less applicable to the subject which I wish once more to bring before this Society:

"The recent investigations" "will not only throw theoretical light on this very obscure subject,"* "but (what is at present quite as much wanted) arouse the attention of observers, and at the same time give it a right direction, by pointing out *what ought to be observed*, without which all observation is but lost labour."†

* Of the Tides.

† Treatise on Astronomy, p. 338, note.

If we wish to pursue the subject of *clinical* observation in general, we have fortunately a *perfect* model and example in the writings of M. Louis.

But the object of the present Memoir is more restricted. My design is to point out "what ought to be observed" in a particular class of diseases, viz. those of the nervous system, and especially to point out some new objects of inquiry in regard to them.

In my three former Memoirs I have treated—

1. *Of the condition of the muscular irritability in paralytic limbs;*

2. *Of the morbid reflex and retrograde actions of the spinal marrow;* and

3. *Of the distinct influence of volition, of emotion, and of the vis nervosa, in diseases of the nervous system.*

I now proceed to lay before the Society the *Plan of Observation* to be adopted in their *further* investigation.

Sufficient has now been done to show that we must, in all such investigations, view the nervous system as sub-divided, not into the cerebro-spinal, and the ganglionic, but into the cerebral, the true-spinal, and the ganglionic; and that in considering each disease of the nervous system, we must trace its influence distinctly in these three sub-divisions of that system; or, to state this view more emphatically, we must inquire,—

1. *What are the distinct diseases of the cerebral, of*

the true-spinal, and of the ganglionic sub-divisions of the nervous system?

2. *What is the influence of disease of one of these systems on the other two respectively?*

3. *In what order is that influence manifested?*

Besides these important questions, there are several others not less momentous. They are these,—

1. *What are the effects of irritation and of counter-irritation, of pressure and of counter-pressure, in diseases within the cranium, or the spinal canal?*

2. *What is the special anatomy of the* base *of the encephalon, and its relation to cerebral diseases?*

3. *Why, with* similar *symptoms, have we* dissimilar *morbid appearances within the cranium; and vice versâ?*

4. *What are the diseases of the nervous system in which we find, generally speaking,* no *morbid appearances on a post-mortem examination?*

That these questions are of deep practical interest will soon become very apparent; and it is especially as an aid to the *diagnosis* of the seat and progress of diseases of the nervous system that these views are most important. I shall proceed to treat of these subjects briefly, as in my former Memoirs.

I.—What are the distinct diseases of the cerebral, the true-spinal, and the ganglionic systems; their mutual influence, and the order in which they are manifested?

If disease be limited to the cerebrum, its influence is limited to the cerebral functions. If

from the cerebrum it extends its influence to the true spinal marrow, the functions of this latter are involved, and spinal symptoms are added to the cerebral; or with the cerebral the spinal functions are impaired. This latter condition may frequently be detected by using the reflex function as a *test;* and in this manner the views of this function, which have recently been laid before the profession and before this Society, come to have their practical application. They afford, indeed, a new source of Diagnosis of the nature, seat, and extent of diseases of the nervous system, and consequently of their Prognosis.

If the disease be limited in its effects to the true spinal marrow, the symptoms are exclusively spinal, sometimes in excess, sometimes in a defective form. If the cerebral system become also involved, cerebral symptoms are superadded to the spinal.

Similar remarks may doubtless be made in regard to the ganglionic system, viewed in its connections and relations with the cerebral and spinal.

There are no diseases so distinctly limited to one system as hemiplegia and tetanus, in their simplest forms. Hemiplegia frequently dissects the nervous system, as it were, and severs the cerebral from all the other functions. The voluntary movements of the side may be absolutely annihilated; the true spinal and ganglionic functions being unaffected. I have examined such cases with a peculiar interest; the cerebral system has been distinctly affected, whilst the true spinal has been as distinctly spared.

It is almost needless to state that the reverse of this event occurs in tetanus. In this formidable disease the true spinal system is affected, the cerebral being, very long at least, uninvolved.

These views I shall illustrate, as before, by briefly adducing cases in point. I may here observe, that we have only to read the admirable volumes of M. Lallemand, of M. Andral, of Dr. Abercrombie, &c. &c., to be convinced that these distinctions have *not* been hitherto made, and that a fresh series of cases, in which they should be accurately marked, is wanting to this department of medical science. Let any one now mark, first the simplicity, and then the complexity of the symptoms of a case of hydrocephalus, or of apoplexy, and he will observe how the cerebral, the true spinal, and the ganglionic symptoms are successively involved in the disease, and how the symptoms, carefully noted, denote the progress of these terrible affections. Let epilepsy or tetanus be subjected to our observation, and we shall remark, that from the true-spinal system, the first seat of the disease, the other sub-divisions of the nervous system become implicated.

I now proceed to notice some of the diseases of the nervous system individually, in this point of view: the first of these is hemiplegia.

I. HEMIPLEGIA.

In cases of hemiplegia, the *danger* is precisely in proportion as spinal symptoms are superadded to those of the cerebral system. If the respiration be

stertorous, if the deglutition be difficult, if the functions of the bladder, rectum, and sphincters be impaired, there is great danger; if these events *continue* for a considerable time, or if they *supervene*, the event is always fatal.

Case I.—A short time ago I visited a patient with Mr. Doubleday, of Blackfriars-road: there was anasarca, and the urine was coagulable. Dr. Bright was consulted. Suddenly an attack of the most complete hemiplegia supervened; the patient was conscious; the respiration and deglutition, and the power of the rectum, the bladder, and their sphincters, were unimpaired. The disease was *limited* to the cerebral function of voluntary motion in the arm and leg; but this was *entirely* destroyed; the foot was moved, however, on touching the sole of the foot! The patient survived the immediate attack, and was moved into the country.

Case II.—I visited a patient with Mr. Beane, of Peckham. He had been attacked with hemiplegia of the right side of the face, arm, and leg; there was slight stertor, and slight dysphagia, with choking. The true-spinal symptoms ceased on taking blood copiously; but the hemiplegia continued. When the upper and lower extremities were still motionless from any effort of volition, movements were induced by tickling, plucking a hair, or applying spoons, just taken out of hot and cold water, alternately. The hemiplegia was complete, but the spinal functions were in full force. The patient gradually but imperfectly recovered.

Case III.—I visited another case with Mr. Beane, in which the symptoms were the same, but more violent; there was some degree of coma; the respiration was stertorous, the deglutition difficult, and the functions of the rectum and bladder impaired. These symptoms *continued* in spite of active and appropriate treatment, and the patient died. A large coagulum existed in the right hemisphere, not, however, extending to the ventricles.

Case IV.—I visited the late member for Carlow with Mr. Dodd, of Portman-street. The patient was perfectly hemiplegic, but perfectly conscious; the speech was inarticulate, the tongue put out towards the right (the paralytic) side, the right arm and leg were absolutely motionless; the patient expressed by signs that he was powerless on the right side of the mesial plane; the respiration was not yet stertorous, but the deglutition was imperfect, and attended with choking; stupor and stertor gradually *supervened*, the deglutition became more and more imperfect, the bladder and rectum, and the sphincters, lost their powers. The respiration became attended with mucous rattle, irregular, and less frequent, and the pulse, from being slow, became accelerated,—affections of the ganglionic system. The powers of life gradually sank. No *post-mortem* could be obtained.

These cases are sufficient to illustrate my proposition, that when, in hemiplegia, spinal symptoms exist, and do not very speedily yield to active reme-

dies, or supervene in cases in which they did not exist originally, the event is inevitably fatal.

The spinal symptoms which exist at first, and gradually yield, probably depend on *counter-pressure* from congestion; this counter-pressure is relieved by blood-letting, &c., and its effects cease. When, on the contrary, the spinal symptoms continue, in spite of the remedies, they probably depend on the extent of the effusion (as in Case III. and probably in Case IV.); and this cannot be remedied.

These views are confirmed by contrasting the cases of hemiplegia, almost invariably the effect of effusion of blood, with those of simple apoplexy.

II. OF APOPLEXY.

The purest, the simplest form of congestive apoplexy, is that which follows a violent fit of epilepsy. I was summoned to such a case in Pimlico, a short time ago, and will briefly detail its principal features:

Case V.—There were perfect stupor and stertor: I passed my finger over the eye-lashes and the conjunctiva, and the eye-lids were motionless; I dashed cold water on the face, and the respiration was unaffected by it. We took a large quantity, I think thirty or forty ounces, of blood from the arm: there was no change in the stupor, in the countenance, or in the pulse; but now the eye-lids closed on touching the eye-lashes, and the patient sobbed deeply on dashing cold water on the face; afterwards, too, he became gradually more and more conscious.

In this case, the state of congestion, and it was pure congestion, with its counter-pressure on the medulla oblongata, was relieved by the free detraction of blood; and the impressibility of the true-spinal system, through the medium of its incident nerves, was restored.

I need scarcely remark, that in congestion of the cerebrum, in apoplexy, as well as in hemiplegia, if the symptoms of affection of the true-spinal system *continue*, the issue is fatal. In such cases the patient dies of asphyxia; and I cannot but think that tracheotomy might sometimes allow time for the operation of remedies or of nature's resources, and prevent a fatal result. It is well known to the members of this Society,* that this operation, performed by Mr. Sampson, of Salisbury, saved the life of a poor patient, dying from the apoplexy of deep intoxication.

I may here observe, that if the stupor and stertor continue, the next series of phenomena are those observed to result from defect of the function of the ganglionic system. The bronchi become clogged with mucus, and the intestines distended and tympanitic from flatus. M. Andral observes—" Le stertor de la respiration est en général un signe d'un très fâcheux augure, et il est rare que les individus qui le présentent d'une manière prononcée échappent à une mort prochaine. Pour l'expliquer, ou trouve sur le cadavre un en-

* See its Transactions, vol. xx. p. 45.

gouement considérable du poumon, et beaucoup de mucosités spumeuses dans les bronches. C'est véritablement par la gêne de la respiration que succombent les sujets frappés d'hémorrhagie cérébrale, dans le cas où l'attaque est forte, et où ils meurent promptement."* It is obvious that the stertor is *not* explained in this manner; but that the bronchial and tracheal rattles which occur under these circumstances *are* so explained. They constitute, in effect, two orders of phenomena. The stertor depends on affection of the medulla oblongata; the crepitus or rattle on that of the ganglionic system. The latter is precisely the effect observed by Sir Benjamin Brodie, Sir Astley Cooper, and other physiologists, in animals in which the pneumogastric nerves had been divided. But the stertor depends upon the affection of the true-spinal system.

Not to detain the Society too long, I will here briefly advert to the interesting case of the hydrocephaloid disease of children. I need scarcely state, that similar phenomena are observed in hydrocephalus, and in the case of sinking from excessive loss of blood; I have also noticed them in extreme chlorosis in adults.

III. HYDROCEPHALOID DISEASE.

Case VI.—I attended the son of Mr. Howlett, in Thayer-street, in consultation with Mr. Grant. The little patient was four years old, and laboured under

* Clinique Médicale, tome v. p. 384; ed. 1833.

symptoms which seemed to denote the existence of hydrocephalus; there was a state of stupor: the eye-lids were only partially closed, and they were immoveable on the approach, and actual contact, of the finger; the respiration was irregular, and the pulse frequent. I observed that the phenomena presented by the eye-lids would afford a criterion, which would suggest both the diagnosis and prognosis. The history, and the cool and pale condition of the cheeks, suggested the hope that the symptoms depended more upon exhaustion than actual disease within the head. I ventured to give sal volatile, brandy, and nourishment. We had, in a short time, the pleasure of observing the eye-lids become impressible to the stimulus of the finger, the respiration to become regular, and the gradual recovery of the little patient was no longer doubtful.

IV. OF MANIA WITH AND WITHOUT PARALYSIS.

M. Leuret has recently drawn the attention of physicians to the distinction between mania with and without paralysis. The latter is, according to this estimable and intelligent writer, unattended by appreciable organic lesion; the former is the effect of disorganization of the brain.

Paralysis is, indubitably, the most characteristic sign of lesion of the cerebrum; and that, generally, in the form of a solution of continuity of the hemisphere opposite to the side affected. But I cannot agree with M. Leuret, that mania, unattended with

paralysis, is unattended with organic lesion altogether. Only it is attended by a lesion of a different kind. As the former is generally one of interrupted continuity, this is generally one of an *intra*-vascular kind: thus coma and delirium are alike effects of deranged conditions of the cerebral circulation; both occur from excitement, and in a state of exhaustion; and I have seen one form of mania cured in the most distinct manner by mercury, and another by steel.

This is a new and most important subject for inquiry. Puerperal mania; mania from exhaustion and anemia in general; mania from mental shock and harass; all arise from a morbid, intra-vascular condition.

As disease, strictly limited to the cerebral system, is attended by cerebral symptoms only, so disease, limited to the true-spinal system, is marked by affection of the spinal functions only. In no case is this seen so distinctly as in *tetanus*.

V. TETANUS.

This disease is, in every respect, the most unequivocal example of an affection of the true-spinal marrow, through an incident and the motor nerves. All the functions of this sub-division of the nervous system are affected in the most violent form, whilst the cerebral functions are unaffected: the dyspnœa, the dysphagia, the constipation, the trismus, the emprosthotonos, the opisthotonos, the extreme susceptibility to causes of physical impression

and agitation, and of mental emotion,—all mark an affection of the true-spinal system ; whilst the freedom from all affections of the senses and of the intellect, the absence at once of delirium and of coma, denote the normal condition of the cerebral system.

Baron Larrey observes,—" Les fonctions du cerveau restent toujours intactes jusqu'au dernier moment de la vie, en sorte que l'infortuné atteint de cette maladie se voit mourir. Je n'oserai hasarder aucune explication sur le défaut de communication au cerveau du principe morbide des nerfs affectés."

" Le malade ne peut plus avaler, ou n'avale qu' avec la plus grande peine. La poitrine est rétrécie, les contractions du diaphragme sont bornées ; la respiration est courte et laborieuse. Les excrétions diminuent et se suppriment, surtout les selles."

M. Larrey adds, " Le malade tombe dans un état d'insomnie ; lorsqu'il s'assoupit, il fait des rêves sinistres ; il s'agite, il s'inquiète, se tourmente, et cherche à sortir de l'état de gêne où le tiennent la rigidité de ses membres et le défaut de jeu des organes." *

Dupuytren states, " A mesure que la maladie marche, ou la voit s'accroître de plus en plus, et se montrer à tel point que le moindre bruit, la moindre secousse, les plus faibles émotions suffisent pour la mettre en jeu et faire entrer le système nerveux, et

* Mémoires de Chirurgie Militaire, tome i. pp. 238, 239.

le système musculaire qui est sous sa dépendance dans un état de convulsion."

This is the very picture of an *excited* condition of the true-spinal system; the cerebral system is, notwithstanding, long spared, and it is only at a comparatively late period of the disease that delirium or stupor supervenes.

Similar remarks apply to the terrific case of hydrophobia.

VI. OF EPILEPSY.

Epilepsy seems to occupy a place on the limits of the cerebral and true-spinal systems: the first symptoms are sometimes apparently cerebral; I am of opinion, however, that this appearance is frequently deceitful, and that the very first symptom is generally, if not always, one of the true-spinal kind. This first symptom is constriction about the throat, and closure of the larynx, more or less complete; then follow violent expiratory efforts and convulsive movements of the trunk and limbs. Intermediately, and even without the convulsive movements, the cerebrum is affected with congestion, and a multitude of cerebral symptoms occur: flashes of light, tinnitus aurium, the aura epileptica; a momentary oblivion; a state of terror, of delirium, or of unconsciousness, &c.; as *parts* of the general convulsion, the tongue is protruded and bitten, the fæces, the urine, or the semen expelled; as *consequences* of that convulsion, the cerebrum is congested, and there is coma. If this state continues, another

order of symptoms takes place; the respiration becomes stertorous, and, at length, affected with mucous rattle, the true-spinal and ganglionic systems becoming fatally involved in the disease.

It is the constriction about the throat which assimilates epilepsy to the state of things which exists in *strangulation*, and which distinguishes it from hysteria. It is this circumstance which associates epilepsy with the crowing inspiration and the convulsions of children: all are *laryngismal*. In epilepsy, there is sometimes a crowing inspiration; the crowing inspiration and convulsion of infants are sometimes followed by epilepsy in subsequent years.

VII. OF SINKING.

It is doubtful whether any set of *diseases* originates in the ganglionic system. This system, however, is frequently involved in other diseases, in a characteristic manner and degree, and the balance of nutrition and of absorption, and the condition of the secretions, with the actions of the heart, stomach, and intestines, become morbidly affected.

The gradual sinking from loss of blood, especially, seems to involve every part of the nervous system. There is mild delirium or stupor from affection of the cerebral system; there is a peculiar catching motion of the larynx and other organs of respiration, from affection of the true-spinal system, instead of the *equable* rhythmic movements observed in health; there is an extreme frequency of the pulse; and there is a peculiar crepitant rattle, at first in the

small, and eventually in the larger bronchi, and an equally peculiar tympanitic distension of the intestines, from affection of the ganglionic system,—*all* of fatal import; at least, I have never known any one of these symptoms to supervene (uninduced by disease of the organ) without its leading to a fatal termination. The functions of the cerebrum, of the true-spinal system, and of the ganglionic system, seem to fail together.

VIII. OF SHOCK.

But if there be no *diseases* originating in the ganglionic system, there is a series of *accidents* which have their *chief* seat in this system. It is those which are caused by *shock*.

Shock may be mental or physical.

When a patient submits to an "operation de complaisance," the mental effort, the anxiety, the suffering, frequently lead to a state of dangerous and even fatal *excitement*. The crush of a limb frequently induces such *depression*, that the patient sinks without any apparent effort made to rally. In both these cases, the effect produced is much displayed in the ganglionic system; the circulation, the secretions, are greatly affected.

I will merely adduce one experiment on this subject for fear of being too prolix.

In the presence of a young Parisian student, I divided the spinal marrow in a frog. I pinched the toes, but there was no movement, no reflex action. My companion observed, "Ah, c'est fini;" I replied,

"Non, ce n'est pas commencé." In a few minutes, the reflex actions became obvious, and in a few minutes more, most energetic. We had examined the circulation previous to the division of the spinal marrow. It was most active. But immediately after that division, scarcely a movement was to be seen. Like the reflex actions, however, the vigour of the circulation was gradually restored.

In one frog, after the return of the circulation, I crushed the leg and thigh with a hammer. There was no sensation of course, the influence of the cerebrum having been removed. The circulation again immediately ceased. It again returned after a time.

These examples will be sufficient to illustrate the fact, that, in order to investigate the diseases of the nervous system with advantage, we must henceforth constantly inquire whether, and in what order, each of the sub-divisions of this system is affected. We must advert to the cerebral, the true-spinal, and the ganglionic functions, and trace the morbid influence upon each and all of them; we must inquire into the condition of the muscular irritability, the reflex and retrograde actions of the true-spinal marrow, and to the distinct actions and affections of volition, of emotion, and of the *vis nervosa*.

The cerebral, true-spinal, and ganglionic subdivisions of the nervous system, are, notwithstanding our artificial attempts to separate them, *one* in nature, and influence each other mutually. *Sensation* and *volition* combine to complicate and modify the functions of the true-spinal system;

emotion modifies the functions both of the true-spinal and ganglionic systems. Respiration is made rhythmic by the influence of volition; it becomes catching and irregular when this influence is withdrawn. Certain secretions become augmented under the influence of appetite, passion, emotion, and are comparatively scanty when these are dormant and unexcited.

The purest case of successive affection of cerebral, true-spinal, and ganglionic systems in disease, is, I think, afforded by the case of fatal sinking in exhaustion from loss of blood.

The *cerebral* system is first affected, and the previous symptoms of reaction give way to impaired vision and hearing, dozing or slight coma, and slight delirium when roused;—then the *true-spinal* system suffers, and the respiration loses its regular, even, and rhythmic character, and becomes slightly audible or stertorous, and each inspiration becomes accompanied by a sudden descent of the larynx, a symptom from which I have never known a patient recover; deglutition is slightly impaired, and the larynx is irritated to choking and violent coughing by the admission of fluids, whilst the sphincters of the bladder and rectum fail; lastly, the power of the *ganglionic* system fails too, and the respiration becomes marked by a slight *crepitous rattle*, like the catching of the larynx, a fatal symptom, and the intestines become *tympanitic*.

I have seen precisely the same order of symptoms, the same order of affections,—first of the cerebral,

then of the true-spinal, and lastly of the ganglionic functions,—from shock to the nervous system. A sensitive person lost a favourite brother, suddenly; he fell into fever, with no definite symptoms; he at length became slightly delirious, then slightly comatose; then melæna, and then tympanitis manifested themselves; then the crepitous rattle in the respiration; and then followed all the phenomena of irregular respiration, and failure of the sphincters, which I have just described. A similar fatal series of symptoms was excited in a pale and chlorotic patient, by a similar mental affection. This is an interesting subject, not, I think, understood, and therefore requiring careful investigation.

The symptoms in fatal cases of coma from apoplexy, or epilepsy, occur in the same order: first, the respiration becomes affected; no effect is induced by dashing cold water on the face; the regular rhythmic movements of the respiration give place to audible, irregular, or catching inspirations; then bronchial, and lastly tracheal, rattles occur, with tympanitic distension of the intestines, and a similar state of the bladder. In a word, the cerebral, the true-spinal, and the ganglionic systems are affected in succession.

It would be interesting to examine the *secretions* in all these cases systematically. This, with so many others, presents promising subjects of future inquiry.

II.—The influence of irritation, of pressure, of counter-irritation, and of counter-pressure, in disease within the cranium and spinal canal.

I. OF IRRITATION AND OF PRESSURE.

Important principles in the investigation of the diseases of the nervous system are irritation and pressure. Inflammation of the arachnoid of the cerebrum, and of the spinal marrow, presents us with an example of the former, and we have delirium in one case, and spasmodic action in the other; of the latter, the effusion of blood, or serum, affords us an example, and according as this takes place in the encephalon, or in the theca vertebralis, we have coma, or paralysis.

Not less important, and hitherto overlooked or neglected, are *counter*-irritation and *counter*-pressure, of which I shall therefore proceed to treat more particularly. The former is induced by slighter causes, as slight effusion into the ventricles; the latter, by the same causes carried to a greater degree.

II. COUNTER-IRRITATION.

There is one idea prevailing throughout M. Andral's admirable volume: it is, that the functional and organic lesions do not constantly accompany each other; that, therefore, the diagnosis must be obscure. M. Andral observes,*—"Toujours la

* Clinique Medicale, edit. 2. tome v. p. 58.

même question se réprésente: pourquoi cette diversité de symptômes avec des lésions en apparence identiques?" And, in speaking of a case of hæmorrhagy between the arachnoid and dura mater, he observes,—"Ne sont ce pas là tous les signes du ramollissement du cerveaux." * But M. Andral's sphere of investigation has been too limited; he has not borne in mind the distinction of the different sub-divisions of the nervous system, with the distinct and significant symptoms attached to each of them.

The subject of *counter-irritation*, and that of *counter-pressure*, in diseases of the encephalon, have been overlooked; topics to which I now beg to call the attention of this Society: we have only to revolve in our minds the complex anatomy of the *base* of the encephalon and of the cranium, to be noticed more particularly immediately, and of the spinal canal and its contents, to see the importance of these two subjects. To these must be added the topics discussed in my three former Memoirs, and it will then be confessed that a new and unexplored field of observation is opened to us, and that new and positive means of diagnosis are in our hands.

There is another circumstance of great importance. M. Andral speaks of *irritation* of the *cerebrum* as the cause of abnormal muscular contractions. Now, in our investigations into the nature of cerebral diseases, we must remember one circumstance; it is impossible to induce muscular action by any irritation of

* Op. cit. 9. 16. Compare also page 4.

the substance of the cerebrum itself. Whenever, therefore, there are spasmodic affections in diseases of the nervous system, we *must* conclude that the *spinal* system is involved, either primarily or secondarily, in the disease. Irritation of the cerebrum may induce delirium and other disorders of the cerebral functions; congestion of the cerebrum may induce coma, paralysis, &c. But if these morbid conditions of the brain be attended by spasmodic or other deranged actions, it is because the true-spinal system is involved in the disease, or affected by it in the way of irritation, counter-irritation, or of pressure, or counter-pressure. Hence we observe the symptoms of spasm in various diseases of the encephalon, the condition being, not the nature of the disease, but that they produce these intermediate effects. *Time*, as is well known, is a very important element in this problem; and why is it so? The fact is to be explained on the same principles. The very same lesion occurring quickly, will produce effects which will be totally absent if it creep on slowly. In the former case, we have the effects of irritation and pressure, or of counter-irritation and counter-pressure; in the latter, the cerebrum has so accommodated itself to the new state of things, probably by the altered condition of its vessels, as to avoid these effects, except towards the close of the disease.

We need not, therefore, now view with surprise the fact that the same lesion, as found *post-mortem*, had been attended by a totally different series of

symptoms during life, any more than the other fact, that, in the different *periods* of that lesion, the symptoms have been different.

The symptoms frequently subside too and reappear. If the disease be not regularly progressive, the encephalon accommodates itself, as I have stated, and the symptoms disappear; if now the disease proceeds, the symptoms also return. At least all this *may* be.

A rapid effusion of serum may resemble hæmorrhage or ramollissement in its effects; a slow effusion may merely obscure the intellectual faculties.

One of the earliest symptoms of hydrocephalus is vomiting. Is this the effect of counter-irritation? Afterwards this symptom ceases, and there is torpor of the digestive tube. Is this the effect of counter-pressure? In the absence of positive proof, I present this as a probable conjecture, and as a subject for subsequent inquiry. In a case of tubercle, seated in the median lobe of the cerebellum, observed by Dr. P. Hennis Green, the same symptom of vomiting, arising probably from irritation of the medulla oblongata, was observed. Similar remarks apply to the state of the *pupil*.

It is not, therefore, the *disease*, but its *effects* upon the brain and spinal marrow, which is the source of the symptoms. If ramollissement, effusion, a tumour, &c., produce similar effects on these textures, the same affection of the functions, the same symptoms, will be observed.

III. OF COUNTER-PRESSURE.

Having pointed out the distinct affection of a cerebral function, in pure hemiplegia, and the implication of the true-spinal functions when, with or without hemiplegia, there is congestion of the cerebrum, and consequent counter-pressure on the medulla oblongata, I must here briefly notice the effect, first, of undue, and secondly, of defective counter-pressure, a little more particularly.

It is well known, from the experiments of M. Flourens especially, that irritation of the cerebrum has no influence in inducing spasmodic action. Whenever, therefore, spasmodic symptoms occur in diseases of the cerebrum, it must, as I have already stated, be on a principle different from that of irritation of the substance of the cerebrum itself; it must be from an impression made upon parts of the nervous system in which the property of exciting spasmodic action on being subjected to irritation resides; these parts are the tubercula quadrigemina, the medulla oblongata, the intra-cranial nerves, &c.

That *undue* counter-pressure on the medulla oblongata may, and actually does, excite convulsion, is proved by the following facts: In the interesting case, most anxiously watched and accurately detailed to me by my friend Mr. Toogood, of Bridgewater, of his own little girl, aged thirteen months, the croup-like convulsion occurred repeatedly, until one day, when the bones of the cranium separated, and

the convulsion ceased. In a case of spina-bifida, related to me by Mr. Herbert Evans, of Hampstead, there was a croup-like convulsion whenever the little patient turned so as to press upon the tumour. In the case of an anencephalous fœtus, described by Mr. Lawrence, convulsion was produced on pressing on the medulla oblongata. In a case of meningitis, given by Dr. Abercrombie, the anterior fontanelle became very prominent. Pressure upon it induced convulsion. Hypertrophy of the brain affords an argument of the same kind: it induces convulsion, *except* in the case in which the cranium grows with the encephalon. These and other facts lead me to think that convulsion arising from cerebral disease is thus to be explained. I shall merely adduce the case of Dr. Abercrombie.

Case VII.—"A child, aged eight months old, died on the 13th March 1818, of an illness which had continued more than three weeks. It began with fever, restlessness, and quick breathing; afterwards, there were frequent convulsive affections, with much oppression, and at last severe convulsions, squinting, and coma. At an early period of the complaint, there was observed a remarkable prominence of the anterior fontanelle; in the second week, this increased considerably; and, in the third week, it was elevated into a distinct circumscribed tumour, which was soft and fluctuating, and pressure upon it occasioned convulsion. It was opened by a small puncture, and discharged at first some purulent matter, afterwards bloody serum. No

change took place in the symptoms, and the child died four days after."*

That *defective* pressure will produce the same effects, is proved by the following most interesting case.

Case VIII.—"M. Bérard, jeune a lu à l'Académie de Médicine, dans sa séance du 22 Octobre, 1833, l'observation d'une tumeur fongueuse de la dure mère. Une circonstance bien remarquable de cette observation, c'est qu'immédiatement après que la tumeur eût été enlevée par M. Bérard, avec la dure mère avec laquelle elle adhérait, le malade fut pris de perte de connaissance et de mouvemens convulsifs du trouc et des membres. M. Bérard, pensant que la brusque soustraction d'une partie de l'envelope resistante du cerveau causait ces accidens, appliqua de suite sur toute la partie dénudée de l'organe un morceau d'agaric, sur lequel il pressa modérément avec la paume de la main. Sous l'influence de cette compression, les convulsions cesserent et l'intelligence se rétablit."†

The rigidity of the muscles in cases of ramollissement, and some other cerebral diseases, doubtless depends upon the same principle. Every observer will now distinguish, from this phenomenon of an acute disease, the chronic rigidity which supervenes in cases of hemiplegia.‡

* On the Brain and Spinal Cord. Ed. 3. p. 57.

† Andral, op. cit. t. v. p. 556.

‡ An erroneous view, I believe, is taken of this subject by M. Andral, vide op. cit. pp. 363—365.

It may be stated in conclusion, that the true-spinal symptoms which occur in cerebral attacks arise from counter-pressure: when the source of this is permanent, as in hæmorrhagy, the effect is permanent too, and the case fatal; when it is remediable by blood-letting, as in congestion, the cause and its effects are removed together.

The convulsions induced by hæmorrhage depend upon a similar subtraction of the intra-vascular pressure of the blood in the medulla oblongata. I need scarcely observe, that, in order that these effects of undue or deficient pressure may be induced, it is necessary that such changes in this pressure be effected rapidly. No such effects of pressure, slowly altered in chronic disease, are observed.

This subject is admirably illustrated by Sir Astley Cooper's experiments on the effects of withdrawing the force of the arterial blood, by applying ligatures or pressure on the vertebral arteries, which I shall notice immediately.

I now beg very briefly to draw the attention of the Society to another interesting topic, viz. :—

III.—The special anatomy of the base of the encephalon in reference to diseases of the nervous system.

It is unnecessary for me to do more than advert to the important anatomy at the base of the cranium,—the course of the various *nerves*, &c., and most particularly the position of the *medulla oblongata*, so apt to be affected by irritation and

pressure, counter-irritation, and counter-pressure, and the consequent source of so many symptoms, and especially of the affections of the pupil, of the respiration, of deglutition, of the sphincters, &c. Another subject of interest is the peculiar position of the tentorium, leaving in its centre a sort of internal foramen magnum. By this membrane, the *direct* effects of pressure from ramollissement and other diseases of the cerebrum on the parts below are prevented, whilst an *oblique* or counter-pressure is the result, with its special effect on the symptoms. This result is modified too by the semi-solid, semi-fluid texture of the various parts of the encephalon.

It is these circumstances, combined with another element of the proposition—that of *time*,—which frequently leads to an effect which I shall notice immediately; viz., the difference of symptoms with identity of lesion, and the similarity in the symptoms when the lesion is dissimilar. The same morbid change will produce very different effects, developed as an acute and as a chronic disease; and different physical lesions will produce nearly the same results if developed in nearly *equal times*.

In a chronic affection, the cerebral substance yields, its vessels becoming empty, and pressure is not induced. In acute affections, on the contrary, pressure is made upon contiguous, and counter-pressure upon distant parts, with their appropriate symptoms. By degrees, even in the latter case, the cerebral substance yields, and the symptoms, in the less severe cases, subside, and even disappear.

But this last subject belongs to the next question :—

IV.—Why, with similar symptoms, have we dissimilar morbid appearances, and vice versâ? and, *what are the diseases of the nervous system, in which we find no morbid appearances on a post-mortem examination?*

If the source of the symptoms be not the mere lesion of a function, induced by the lesion of a special part or organ of the encephalon, but the effect of irritation and counter-irritation, of pressure and counter-pressure, it is obvious that these primary effects, and their effects in their turn, may result from *any* disease, if the *times* be similar, whatever that may be.

It is accordingly to the *history* that we chiefly have recourse for the diagnosis of cerebral diseases, and especially to that of the seizure and first stage ; at their close, almost all diseases of the encephalon are alike : almost all terminate by coma, paralysis, convulsions, stertor, and impaired actions of ingestion and egestion, and of the orifices and sphincters, from compression of cerebrum and medulla oblongata.

There is another view of this important subject. Morbid changes take place towards the *close* of many diseases, which do not properly or at all constitute the disease. In exhaustion, in chlorosis, in delirium tremens, effusion of serum, and even of lymph, occurs. In disease of the encephalon itself,

such effusion also takes place, late in its course, and *complicates* the original disease. Further:—

It is plain that in the immediate effect of *shock* applied to the nervous system, whether this be mental or physical, we can expect *no* morbid physical lesion.

It is equally plain, that, as the immediate effect of *exhaustion* of the vascular system on the nervous system, we should likewise discover no organic change.

It is equally plain, that, in the immediate effects of strychnine and of the hydrocyanic acid, we should also observe the absence of all perceptible physical change.

Now these effects are the *types*, as it were, of a series of diseases in the human subject.

Shock and exhaustion induce delirium, and even mania; a wounded or poisoned nerve becomes the cause of tetanus and hydrophobia; the hydrocyanic acid induces the almost sudden cessation of the functions. We could not, in any of these cases, expect organic changes.

But though there may be no such change as we have been in the habit of looking for in our *post-mortem* examinations, it does not follow that there may be *no* physical change whatever. The effect of shock may be altogether inscrutable; but the effects of exhaustion may, even in the commencement, be perfectly real, but *intra-vascular*. This is the case in some forms of mania,—in puerperal mania, the mania from undue lactation, &c.

I must here adduce two interesting facts, one observed by myself, the other an experiment of Sir A. Cooper.

The animal which dies from loss of blood, dies convulsed. The cause of this convulsion is the anæmious condition, not of the brain, but of the spinal marrow; this is ascertained in the sheep in the following manner:—

Experiment.—The butchers usually divide the large vessels of the sheep, and the animal dies in the midst of convulsions. I begged that the spinal marrow might be first divided most completely, and then the blood be allowed to flow from the divided blood-vessels: again there were violent convulsions, —an event which could depend on the anæmious state of the spinal marrow alone, the influence of the brain having been removed.

"I tied," says Sir A. Cooper, "the carotid arteries (in a rabbit). Respiration was somewhat quickened, and the heart's action increased; but no other effect was produced. In five minutes, the vertebral arteries were compressed by the thumbs, the trachea being completely excluded. Respiration almost directly stopped—convulsive struggles succeeded—the animal lost its consciousness, and appeared dead. The pressure was removed, and it recovered with a convulsive inspiration. It lay on its side, making violent convulsive efforts, breathed laboriously, and its heart beat rapidly. In two hours it had recovered; but its respiration was

laborious."* The compression was repeated five times with the same effects. The want of the due supply of blood to the medulla oblongata induced convulsive actions.

It is to the hidden effect of shock, and the intravascular change in exhaustion, and their consequences, that I now wish to direct the attention of the members of this Society. My design being merely to point out objects for observation, I do not propose to enter upon the discussion of any of them on the present occasion.

I shall conclude by observing, that besides shock and exhaustion, there are other causes of disease, or rather of derangement, of the nervous system, the effects of which require new investigation. Such are the effects of alcohol, seen in delirium tremens, the effects of sexual excesses, seen in some cases of paraplegic affection. The affections of the head in arthritis and in dyspepsia are of the same kind. Of the same character, and of extreme importance, are the effects of exposure of portions of the nervous system, especially of the spinal marrow and superficial nerves, to extreme *cold*. But I must conclude these remarks, and will do so by adducing interesting paragraphs from Dupuytren, M. Gendrin, and M. Andral.

"Du reste," says the first, "les symptômes et l'autopsie se réunissent pour démontrer que la

* Guy's Hospital Reports, vol. i. p. 465.

tétanus est une affection essentielle nerveuse, et sans lésion organique qui lui soit propre."

" J'ai observé," says M. Gendrin, " plusieurs hydrophobes, et j'ai assisté à l'ouverture des cadavres d'un plus grand nombre encore ;" " je n'ai jamais vu la moindre trace d'inflammation ou de lésion quelconque dans les organes encéphalo-rachidiens, ni dans les nerfs ganglionares."

M. Andral observes, " Que le nombre d'altérations connues est petit à côté de celui des lésions qu'on ignore ! Les cas où, après la mort, ou trouve quelque chose d'appréciable pour le scalpel sont les plus communs pour les autres organes ; pour le système nerveux c'est tout l'opposé : les cas où on rencontre des lésions sont de beaucoup les plus rares. Cette assertion paraîtra paradoxale à ceux qui ne connaissent des lésions nerveuses que *les trois ou quatre maladies qu'on observe dans les hôpitaux* ; mais les affections nerveuses se competent par centaines, et pour ne parler que de ces grandes perturbations qui portent sur le mouvement, sur la sensibilité, sur l'intelligence, où est la lésion dans ces cas ? La plupart du temps on n'en trouve aucune, ou celles qu'on observe n'ont aucun rapport avec les désordres fonctionels."

There is still one other topic which I must briefly notice in connection with the present subject. It is

THE EFFECTS OF EXPOSURE TO SEVERE COLD.

I particularly noticed the effects of exposure to severe cold, during my experiments on hibernation,

published in the Philosophical Transactions of 1823. Whilst exposure to a moderate degree of cold conduces to the state of hibernation, a physiological and preservative condition, exposure to intense cold induces *torpor*, a state totally different, but not sufficiently distinguished from the former, of a pathological character, and of *fatal* tendency. In the state of hibernation, the animal is dormant and motionless, but the actions excited are perfectly regular; in the state of torpor, on the contrary, the animal moves about, but the movements are, in the highest degree, irregular and tottering. I always observed that the state of torpor issued in death.

In man, similar effects are produced: the lips cannot articulate, the fingers cannot grasp any minute object, the feet and legs cannot sustain the individual, who has been thus benumbed by exposure to cold.

Exposure to extreme heat or cold equally induces spasmodic action in the muscular system. A young gentleman having been ordered a warm bath, mistook the temperature, and exposed himself to such a degree of heat as induced general spasmodic action of the most painful kind. The effect of too intense a cold on swimmers is a fact too well known to be further noticed.

When the exposure to cold is more partial, effects on both the sentient and motor portions of the nervous system are produced, which have this characteristic:—there is at first paralysis, and afterwards

undue action. The first effect of exposure to cold is numbness in the fingers; this usually yields to pain, vulgarly termed "hot-ache," especially if the warmth be restored too rapidly. In a relative of mine, exposure to a severe wind, with sleet, induced perfect numbness of one side the face; this paralysis subsided, and gave way to severe tic douloureux. A lady, whose case I shall detail more at length immediately, was exposed to severe cold with wind. The next day she arose from bed with paralysis of one side of the face! This paralysis yielded by degrees to spasmodic tic.

Exposure to cold is a far more frequent cause of paralysis than is generally supposed. Such an effect on the face has been designated, in common language, (which frequently involves an important truth,) *a blight*. Cases of paralysis of the face, from exposure to cold, are detailed by Dr. Powell in the fourth volume of the Transactions of the Royal College of Physicians. There is a poor little boy, residing near me, of six years of age, whose limbs are nearly paralytic, in consequence of a long and most criminal exposure to cold by a nurse. Some years ago, I visited a gentleman perfectly paraplegic, from long exposure to intense cold on the outside of a coach. Baron Larrey speaks of permanent paralysis, left by exposure to intense cold during the campaign in Russia. Paralysis, happily of a less permanent character, has been experienced by every one under similar circumstances.

But the point to which I must now revert, and to

which I beg to call the attention of the members of this Society, is, that the first effect of a partial but severe exposure to cold is paralysis; whilst the more remote effect is undue action. This principle I proceed to illustrate by a most interesting case of *spasmodic tic*, interesting in many points of view. It is given in the form of a letter, written to an eminent authority on this subject.

"DEAR SIR,

"I saw Lady — ——, now Lady ———, before a recent visit to Switzerland, and I have this day, after my return, seen the correspondence between you and Mr. ———, of ———, on her ladyship's case. There has certainly been some misapprehension of this case, for Mr. ——— speaks of the 'affection having *shifted* from one side of the face to the other;' and you say, 'there is certainly a degree of *weakness* of the portio dura of the *left* side.' Now I believe there has never been a change of the side affected, and that it is not the portio dura of the *left* side which is weakened, but that of the *right* which is irritated, so producing spasm.

"This view I will explain:—

"The probable cause was exposure to a severe cold wind.

"When the affection *first* took place, the face was drawn towards the *left* side, but the eye-lid of the *right* was paralysed, the eye requiring the application of the finger to close it, and being *more open* than the left, *the left* being in its *natural* state.

After a time, the face was drawn to the *right*, and now the *right* eye, which gaped before, became *less open* than the left; but the *left* was *still* in its *natural* state.

"In a word, the change was from *paralysis to spasm*, but it was of the same side—*always* the *right*; and now, it is not *weakness* of the *left* portio dura, but *irritation* of the *right*. The *right* eye was always *morbidly* affected, first by *paralysis*, now by *spasm*; the left has *always* been *natural*.

"The *sensibility* has always been *unaffected*.

"At this time, every thing is *spasmodic*, and *that* of the right side of the face.

"The right eye-lid is usually more closed than the left; and when closed by an act of volition, it is drawn a little awry (to the right); and during laughing, it is spasmodically closed without an act of volition.

"The whole right side of the face is spasmodically drawn to the right on laughing, or speaking, or *eating on the right side* of the mouth, and a *new* dimple is *formed* on the right side of the chin. All is normal on the *left* side, which is only drawn a little by the spasmodic action on the *right*. The *eye-lid* is natural, and mastication is naturally performed on this side, except from the decayed state of the teeth. It is plain that, whatever the cause might be, and I suspect it was exposure to severe cold, it first induced that change in the portio dura of the right side which produced paralysis, and which, being *diminished*, is now characterized by

spasm. It is the *right* and not the *left* side, therefore, to which our remedies must be applied, if applied near the motor nerve, immediately or remotely the seat of the disease. I have seen several cases beginning with paralysis and proceeding to spasmodic affection of the portio dura of the same side. I have also seen *one* unequivocal case of paralysis affecting successively the portio dura of both sides, after an interval of several years.

" I am, dear Sir, &c.

" 14, Manchester Square,
September 20th, 1840.

" *To* —— ——."

From the misapprehension in regard to this affection, to which I adverted in the above letter, the remedies were actually prescribed to be applied to the unaffected side of the face !

I need scarcely state, that in these cases we should scarcely expect to find any *post-mortem* appearances.

I conclude by stating, that, in all future cases of disease of the nervous system, we must observe the various points which have been brought before the Society, in the order given in the following Table :—

TABLE.

I. *The Cerebral Symptoms.*
   1. *Excess, or defect, in the Senses; Pain.*
   2. *Delirium; Coma.*
   3. *Paralysis.*

II. *The true-Spinal Symptoms.*
   1. *Spasm, clonic or tonic.*
   2. *Paralysis,—in regard to*
      1. *The functions of Ingestion.*
      2. *The functions of Excretion.*
      3. *The Muscular System generally.*
   3. *Reflex and Retrograde Actions.*
   4. *Irritability of the Muscular Fibre.*

III. *The Ganglionic—in regard to*
   1. *Nutrition.*
   2. *Temperature.*
   3. *The Secretions, especially those of*
      1. *The Bronchi.*
      2. *The Stomach and Intestines.*
      3. *The Kidneys and Bladder.*

IV. *The Effects of Emotion.*

V. *The Effects of Shock.*

VI. *The Effects of Counter-pressure, &c.*

What is now wanted is a series of such *cases*, taken with the care and accuracy of M. Louis, and then as carefully analysed and compared.

POSTSCRIPT.

In this postscript I wish to call the attention of the profession to a source of the symptoms in encephalic affections not hitherto noticed by any medical writer:—it is the influence of irritation of the *membranes* of the brain in inducing *spasmodic* affections.

In an important experiment which I propose to lay before the Society in the next session, I found that although every kind of irritation, puncture, laceration, &c., of the cerebrum and cerebellum was entirely inoperative, yet that laceration or pinching of the dura mater immediately induced peculiar spasmodic movements of the eye-ball, the eye-lids, the head, &c.

These effects are probably induced through branches of the trifacial nerve, which, as in the recurrent of Arnold, is well known to impart branches to the dura mater, and which may do so to the other membranes within the cranium.

The whole subject is in need of investigation. Our way must be pointed out, first, by experiment. This must be followed by observation. The membranes within the cranium and spinal canal, the other *serous* membranes, and the *internal* textures in general, must be submitted to a similar examination.

I also propose to submit the questions discussed in the present Memoir, to experimental inquiry.

June 19, 1841.

ON

DISLOCATIONS,

ESPECIALLY OF THE HIP-JOINT,

ACCOMPANIED BY ELONGATION OF THE CAPSULE AND LIGAMENTS.

By EDWARD STANLEY, F.R.S.,

SURGEON TO ST. BARTHOLOMEW'S HOSPITAL.

READ JANUARY 12TH, 1841.

It may be presumed that observations similar to those which I am about to submit to the Society, have occurred to other pathologists and surgeons; yet as the subject of dislocations of the larger joints, and especially of the hip, occurring under other circumstances than as the direct consequence of external violence, or of the destructive processes of inflammation, has not, as it has appeared to me, received the attention which its importance demands, I have thought that the following cases, with the reflections they suggest, might not be unacceptable.

Case I. Dislocation of both hip-joints, consequent on disease of the spinal cord, and probably of the brain.—A gentleman, aged thirty-nine, in the year 1824, was attacked with spasms in the pec-

toral and intercostal muscles, and numbness in the whole of the left side of the body, with the exception of the arm. In the left thigh and leg, sensation was wholly lost, the power of motion remaining. He had no sensation of passing his urine after it had quitted the bladder, and was but just aware of the evacuation of the fæces. Vision in the left eye was impaired to the extent that he could but distinguish daylight. Disease of the brain was supposed to be the cause of these symptoms, and a seton in the neck was persisted in for six months without benefit. Subsequently, the spinal cord was supposed to be the seat of disease, and for several months the back was stimulated with tartar emetic ointment. The symptoms continued, with increasing weakness in the thighs and legs, to the complete loss of the power of support, and of sensation in them. Unless he saw his legs, he could not tell in what direction they were; but on looking at them so as to know their position, he could readily move them. At the same time, with a sense of tightness in the lower part of the back, he felt as if a complete separation had taken place of his body from his thighs. With the impairment of the natural sensibility of the limbs, he occasionally suffered in them the most severe pains, sometimes attended with a smarting sensation, at others, with the sensation of a blow frequently repeated. Red-hot irons were now held close to the spine daily, but with no marked benefit. Such is the outline of the case from its commencement in 1824 to the end of the

year 1827, when there was a diminution in the severity of the pains, with recovery to a limited extent of the power of moving the limbs. In March 1828 he was again attacked with violent spasms in his body and limbs, which compelled him to remain in bed several days. On rising from his bed when the spasms had subsided, he found, to his great surprise, his right lower limb so much shortened, that when erect he was but just able to touch the ground with his great toe, and at the same time he remarked a protuberance at the upper and back part of the thigh. In the following December there was a repetition of these occurrences, but in the other limb, an attack of spasms being followed by shortening of it, with a protuberance at the back of the thigh, as on the opposite side. He could still bear the weight of his body upon his limbs, but was almost wholly unable to move them. At no period had there been tenderness, or other sign of inflammation in the soft parts around the hip-joints. Through the next two years he very gradually improved in respect to the diminution of the spasms, and the recovery of the power of moving the limbs, which brings the narrative to June 1831, when, for the first time, the case falling under my observation, I noted, in conjunction with other surgeons, the following particulars respecting it.

The spasms and the attacks of pain are chiefly confined to the chest and to the lower limbs; he suffers a distressing sensation of tightness with acute pain on both sides of the chest, in the direc-

tion of the ribs from their angles to the sternum. Movements of the arms excite this pain. Firm pressure by the hands against the walls of the chest greatly relieves it. There is paralysis of the rectus superior muscle of the left eye, and its sensibility to the impression of light is much weakened. In the erect posture there is a remarkable projection at the back of the pelvis, which, upon examination, is ascertained to be caused by the extremities of the thigh-bones occupying this situation. In rotating each thigh, the head of the femur can be felt moving freely beneath the glutæi muscles. The trochanter major of each femur is thrown directly backwards. The distance between each trochanter and the head of the bone is natural. The head of each femur thus situated upon the posterior part of the pelvis is two inches and a half below the highest part of the crista of the ilium, and four inches distant from the anterior superior spine of the same bone. In the erect posture, there is a diminution in the stature to the extent of between five and six inches, and evidently from the pelvis sinking between the thighs. In the horizontal posture, the thighs can be readily pulled downward so nearly to their natural situation, that the shortening of the stature is then only to the extent of between one and two inches. As a consequence of the ascent of the thigh-bones to the back of the pelvis, the whole form and outline of the thighs are altered, and at the upper and front part of each thigh is a protuberance, apparently formed by the rectus muscle,

not yet adapted to the altered position of the femur. On a re-examination of the case in 1833, I found that a moveable plate of bone, semicircular, thick, and about three inches in extent, had formed immediately above the head of each femur, which, in the erect posture, pressed closely against it; these osseous plates might be regarded as the commencement of the formation of new acetabula.

From the year 1833 to the present time, there has been no material change in the symptoms. He still suffers attacks of severe pain and spasm in the pectoral and other muscles upon the sides of the chest, and in the muscles of the lower limbs, and after the trial of every variety of treatment, it is doubtful whether even a mitigation of suffering has been obtained from any other remedy than opium in some of its forms, to which he resorted at an early stage of his affliction, and has continued taking it in large daily doses. The extremities of the thigh-bones still project upon the back part of the pelvis as they did at the period of their displacement in the year 1828, but they are not so freely moveable as they then were, apparently from the thickening and consolidation of the surrounding cellular tissue. There has been a gradual recovery of the power of directing the movements of the limbs, which is now sufficient to enable him to walk at a slow pace, with the aid of a stick. It might of course be expected that under the most favourable circumstances, a long time would be required for the adjustment of

the muscles of the pelvis and thighs to the altered situation of the thigh bones.

Case II. Dislocation of the hip-joint consequent on an attack of hemiplegia.—I did not witness the following case, but the history of it is drawn out by the gentleman who had the charge of it, and upon whose accuracy I can rely.

A gentleman aged 48 had been for above eight years affected with hemiplegia, chiefly perceptible in the left lower limb. He had been a courier, and he attributed his complaint to the severity and vicissitudes of weather to which he had been constantly exposed. Two years before his death, it became evident, as he moved about on crutches, that the affected limb had become considerably lengthened; this was accompanied by wasting of the limb, with a remarkable flaccidity of the muscles; and on rotating the thigh, the head of the femur could be so plainly felt, that it was concluded it must be out of its socket. This circumstance gave an interest to the case, which led to a careful examination of the hip-joint after death, when the following peculiarities were noticed: The capsule and the ligamentum teres were entire, but elongated to the extent of allowing the head of the femur to pass beyond the limits of the acetabulum. The brain presented no other morbid appearance than a preternatural quantity of fluid in the ventricles. The spinal cord was found healthy in its cervical and dorsal portions, but in its lumbar portion it was so pulpy as to be almost of a mucilaginous consistence. The roots of

the lumbar nerves were in the same softened condition as the corresponding portion of the cord. The thoracic and abdominal viscera were healthy.

Case III. Dislocation of the hip-joint consequent on rheumatism.—Mary Elsely, aged 32, was admitted into St. Bartholomew's Hospital in December 1837, on account of general febrile disorder, combined with pain in the left shoulder-joint, in the right hip-joint and down the front of the thigh. She was in the fifth month of pregnancy; her occupation was that of a hawker of brushes, which exposed her to the vicissitudes of the weather. She stated that she had been in good health until within a fortnight of her admission, when she was attacked first with pain in the right elbow and left shoulder-joints, and afterwards in the back of the right thigh. The pain varying in severity, was occasionally acute; on some days it was confined to the thigh, and on others was excruciating through the whole limb from the hip to the toes. Throughout, there had not been more constitutional disturbance than might be referred to the amount of pain she endured. Her disorder was considered to be rheumatism, and the treatment of it was conducted accordingly, with the occasional applications of leeches, belladonna and opium plasters to the shoulder, hip, and thigh, while the internal remedies had been calomel and opium, to the extent of producing salivation, Dover's powder, hemlock, iodide of potassium, &c., each of these remedies in its turn procuring alleviation of the pain, but it again and again recurred in the same part.

It was, therefore, but slowly that the complaints subsided, and it was not until she had been in the hospital above ten weeks that she had sufficiently recovered to be able to move from her bed, to which she had been hitherto strictly confined. On the first occasion of doing so, the woman discovered, as she said, to her horror, a shortening and distortion of the right lower limb, of the mode or time of occurrence of which she could not give the least account, not having the slightest suspicion of it, nor had any one else, until, on getting out of bed, the hip was discovered to be dislocated. I examined the limb, and found it much inverted, and shortened to the extent of a little more than an inch and a half, and the displaced head of the femur could be plainly felt through the glutæi muscles upon the dorsum of the ilium. On rotating the limb, the head of the bone moved freely and without pain. There was no thickening, or in any other respect an unnatural condition of the soft parts, either contiguous to the acetabulum, or in the tract through which the head of the bone must have passed to the situation it now occupied. The woman being in the eighth month of pregnancy, it was not deemed prudent to make any attempt to replace the head of the bone in its socket; she accordingly left the hospital.

Case IV. Dislocation of the hip-joint consequent on pain in the thigh, treated as sciatica.—A woman aged 30 was admitted into St. Bartholomew's Hospital in March 1838. She had been servant in a gentleman's family at Hampstead, where her illness had commenced with a painful swelling of one of the

joints of the right thumb, which, after a day or two, subsided, and was immediately succeeded by pain and stiffness in the right hip-joint, so far impeding its motions, that she was occasionally confined to her bed. She was seen at this period by several medical men, who considered the case to be sciatica, and treated it as such for between two and three months before her admission into the hospital. She now complained of pain in the right hip, but extending upwards to the loins, and down the thigh, with stiffness of the whole limb. The skin was tender on pressure through the course of the ischiatic nerve. Succussion of the whole limb by the application of force to the sole of the foot, and with the knee-joint extended, produced no pain in the hip-joint; and although the movements of the hip were impeded by the pain in the thigh, and the general stiffness of the limb, yet she could bear the weight of her body upon it without much inconvenience. In the view still taken of the disease, as being sciatica, no other treatment was adopted than the administration of opium, with the application of mustard poultices to the limb. This treatment having been continued for some time without benefit, she was removed to a surgical ward, when there was discovered to be a complete dislocation of the affected hip, of the occurrence of which the woman had not the slightest idea, and was not able, therefore, to give any information respecting the exact time of its taking place; the only point that could be clearly ascertained was, that the dislocation must have oc-

curred within the period of her stay in the hospital, through the whole of which she had been confined to her bed. The head of the femur could be plainly felt upon the dorsum of the ilium, and was freely moveable without pain. The limb was decidedly inverted, and shortened to the extent of nearly an inch and a half. There was no other swelling of the hip than that resulting from the displaced head of the femur, and there had been no evidence of inflammation in the soft parts around the hip-joint. The whole system was in a state of nervous excitement, which very gradually subsided, and in the same degree the uneasiness in the limb diminished. In about six weeks after her admission, she had become free from complaint, except the lameness consequent on the dislocation.

An attempt was, in this case, made to bring the head of the femur downwards to the level of the acetabulum, with an apparatus which, by the operation of a pulley and weight, maintained a gradual but continued extension of the limb. This was persevered in for many weeks, whether or not with benefit was doubtful. When the woman left the hospital there was still a decided inversion and shortening of the limb.

Case V. Dislocation of the hip-joint consequent on rheumatism.—I was consulted in June 1836, respecting the propriety of attempting to reduce a dislocation of the hip-joint which had occurred under the following circumstances. A youth aged fourteen suffered, at Gibraltar, an attack of inflammation in both hip-joints, with severe constitutional derange-

ment, which was reported to be of the nature of rheumatic fever. He was confined to his bed above twelve months. Then, on beginning to move about, it was discovered that the right hip-joint had become dislocated, but he was wholly unaware when the dislocation had occurred. At the time of my seeing this patient, four years had elapsed since the commencement of his illness. His general health is now perfectly good. There is not the slightest pain in the hip or elsewhere, but the limb is everted and shortened, as ascertained by exact measurement, to the extent of three inches and a half. The trochanter major is greatly more prominent than in the opposite limb, and the head of the femur is readily distinguished through the glutæi muscles, having its proper relation to the trochanter consistent with the integrity of the neck of the bone, and with the everted position of the limb. Flexion and extension of the thigh are perfectly free. Rotation of the thigh inwards can be executed, but not outwards. The soft parts of the hip, and in its neighbourhood, are sound.

It was from the characters of this dislocation differing so materially from the ordinary dislocation of the hip-joint consequent on disease, that the question arose whether an attempt should be made to replace the head of the femur in its socket. I had no hesitation in deciding against such a measure, from the consideration of the free action and usefulness of the limb, notwithstanding its shortened and everted position, bearing in mind also the little

probability of the head of the bone remaining in its socket, should we be able to place it there, of which there could not but be considerable doubt. Why the limb had assumed, in this instance, an everted rather than the inverted position which it might be expected to have with integrity of the neck of the femur, cannot, I presume, be satisfactorily explained.

Case VI. Dislocation of the hip-joint, which occurred in the sixth week from a fall.—A female, aged 14, in passing through a passage, the stones of which were slippery, fell upon the outer side of the right thigh. There immediately ensued a powerless condition of the limb, which was soon followed by severe pain and swelling in the front and outer part of the thigh, with spasms of the muscles. The surgeons summoned to the case could detect no deviation from the proper length and position of the limb, and accordingly expressed their opinion that the injury was confined to the muscles. At the expiration of a month there was no recovery of the power of using the limb, and the patient was in consequence removed to the sea side. Gentle efforts to walk were here made with the help of a stick, and at the same time the limb was every day placed in a vapour bath. At this period the patient occasionally remarked that she thought her hip was growing out; on one occasion, whilst using the vapour bath, she observed to her attendants that the projection of the hip had suddenly increased, and on examining the limb immediately afterwards, there was found to be a well-marked dislocation of the head

of the femur. How this dislocation had occurred no opinion could be given; but the surgeon who had been in daily attendance was certain no dislocation had existed before the present time, which was in the sixth week from the occurrence of the fall. At this period I first saw the case in conjunction with other surgeons, when the following suggestions were offered respecting the probable nature of the injury—that in the fall, the ligamentum teres had been ruptured, effusion of fluid then taking place into the capsule; this had gradually yielded, and by its elongation had allowed the head of the bone to pass out of the acetabulum to the dorsum of the ilium, upon which it was now situated. We found the space between the anterior superior spine of the ilium and the top of the patella to be an inch and a half less than on the opposite side. There was no tendency to inversion or eversion of the limb, and it could be moved freely in any direction, when the head of the bone might be felt rolling beneath the fingers placed upon the hip. The neck of the femur could be distinguished, and of its integrity there could be no doubt, from the movement of the head of the bone simultaneously with the trochanter, and from the preservation of the natural distance between the two prominences. It was judged improper to make forcible extension of the limb, as there might be some mechanical obstacle, such as the effusion of serum or lymph, to the return of the head of the bone into its socket. Accordingly no other treatment was recommended than quietude of the limb,

with the application of a bandage which might check the further ascent of the head of the femur upon the ilium. When about six months had elapsed from the occurrence of the accident, the patient, on rising from her bed, exclaimed that the projection of the hip had disappeared, and that her limbs were of the same length. A careful examination of the injured limb confirmed the statement of the return of the head of the bone to its socket, but it subsequently became again displaced ; for at a later period, the head of the femur could be plainly felt on the dorsum of the ilium, and the limb was now shortened to the extent of three inches, but still neither inverted nor everted. The power of using the limb was however progressively increasing, and evidently by the active advance of the natural processes combining to restore the usefulness of the limb in any case of unreduced dislocation, especially when occurring in a young and healthy person.

Case VII. Injury to the hip-joint, attended with shortening of the limb, from a fall upon the knee.— A youth aged 18, in walking, was thrown down by his foot striking against a pole which lay unperceived in his way. His face and left knee were the only parts bruised. But on being raised from the ground, he was unable to bear weight upon the left leg, and felt pain in the upper part of the thigh. He remained in bed until the pain in the thigh ceased, and then, on moving about, the limb was, as he stated, very feeble. Three months having elapsed from the accident without the recovery of

much power of using the limb, he was brought from the country to St. Bartholomew's Hospital. Upon a careful examination of the injured limb, the following particulars were ascertained respecting it. By comparison with the sound limb, there was found to be a diminution of the space between the anterior superior spine of the ilium and the top of the patella to the extent of two inches. There was no inversion or eversion of the foot. The head of the femur could not be anywhere distinctly recognized. The trochanter major was considerably more prominent than on the opposite side. All the movements of the thigh could be freely executed, and without pain. By moderate extension with the hands, the limb could be brought down to its natural position, when the unnatural prominence of the trochanter disappeared; but on remitting the extension, this prominence reappeared, and the limb became again shortened. No thickening or other morbid change could be discovered in the soft parts around the hip-joint.

The first remark suggested by the perusal of the foregoing histories, may be one of surprise, that cases differing in so many particulars should be combined in one series, apparently without regard to the scientific precision demanded by the present state of pathological knowledge; yet it will be observed, that they are all striking illustrations of the important practical fact to which it is my object to direct the attention of the Society, namely, the occurrence, and by no means rare, of dislocations of

the hip-joint, not as the direct consequence of external violence, nor preceded or accompanied by such changes in the soft parts around the articulation as are attendant on dislocations resulting from the destructive processes of inflammation.

In the first and second cases which have been related, the displacement of the head of the femur from the acetabulum occurred as a consequence of impaired nervous power, combined with spasms in the muscles of the limbs, in one case ascertained to be from disease of the spinal cord ; and in the other, presumed, from the collateral symptoms, to be from the same cause. It may be affirmed that in the first, and very remarkable case, where both hip-joints were dislocated, there had been, at no period, inflammation in the joints or contiguous parts ; and under such circumstances we must, I think, conclude that the pathological changes in these joints had been the elongation of their capsules and ligaments. In the second case, dissection showed such to be the condition of the joint, the capsule and ligamentum teres being lengthened to the extent of allowing the head of the femur to pass considerably beyond the acetabulum. We know that lengthening of the arm may be the consequence of paralysis of the deltoid and other muscles combining in their natural actions, to maintain the articular surfaces in contact. It may be said that the looseness and thinness of the capsule of the shoulder-joint permit no comparison of it with the dense, thick, and closely-embracing capsule of the hip-joint. How-

ever this may be, we have before us the fact of the lengthening of this capsule, and with it of the ligamentum teres, of which no other account can be rendered than that it was a consequence of impaired nervous power in the muscles surrounding the articulation.

In the third, and in the fifth case, the dislocation of the hip must be viewed as the consequence of rheumatic inflammation in the fibrous and synovial tissues of the joint; and in the fourth case, the dislocation may be ascribed to the same cause, although the disease had been treated under the name of sciatica. It can scarcely be a question, that in each of these three cases, the pathological changes were elongation of the capsule, with either the elongation or actual destruction of the ligamentum teres. The sixth and seventh cases are examples of injuries to the hip-joint from external violence in young persons, followed by a gradual shortening of the limb, which, from the attendant circumstances, can be explained only by the yielding and consequent lengthening of the ligamentous tissues of the joint. In the sixth case, the head of the femur was gradually, and at a distant period from the injury, displaced from the acetabulum. In the seventh case, a similar change in the relations of the articular surfaces was indicated by the shortening of the limb, although the head of the femur could nowhere be distinctly recognized. Other cases have been reported to me of dislocations of the hip-joint, occurring gradually, and without inflammation, after

injuries from external violence. Whatever difficulty there may be in explaining such a form of dislocation, the knowledge of the simple fact of the possibility of its occurrence is of much importance to the establishment of a correct diagnosis of the various injuries occurring to the hip-joint.

It is well ascertained that inflammation of a mild character, whether rheumatic or otherwise, may, without evident change in the organization of ligamentous tissue, so far affect its property of resistance, that it will yield considerably to an extending force; thus, in the knee-joint, the crucial and lateral ligaments may become lengthened to the extent of permitting such a displacement of the articular surfaces, that, from the view of the outside of the joint, it might be inferred actual destruction of the ligaments had taken place; and it is to be observed, that these changes in the ligaments of a joint, very slow in progress, may be unaccompanied by pain, or other symptoms of inflammation. My colleague Mr. Wormald lately directed my attention to the following case of yielding of the ligaments of the knee-joint in one of the out-patients at St. Bartholomew's Hospital. A man, about 40 years of age, states, that about three years ago he caught a severe cold, immediately after which his knee became weak and swollen, and that there succeeded a very gradual alteration in the form of the joint, but unaccompanied by pain or other sign of inflammation. The articular surfaces are now displaced to the extent that the head of the tibia projects a full inch

on the inner side of, and a little behind the inner condyle of the femur, with a corresponding hollow on the outer side of the joint, and some fluid within the joint can be felt on each side of the patella. In the hip-joint, from inflammation of a mild character, and probably commencing in its fibrous tissues, there may be effusion of fluid into the capsule with the yielding of it, and of the ligamentum teres producing, first, an increased length of the limb, and an increase of its circumference in the district of the joint ; and subsequently, on the head of the bone reaching the brim of the acetabulum, a shortening of the limb, as the capsule gradually yields to the action of the powerful muscles constantly tending to draw the limb upwards and backwards. There was a case in St. Bartholomew's Hospital, which I refrained from adding to the series described in this paper, because I did not at the time of its occurrence record more than its prominent features, which were as follow :—In a female, an injury to the hip from external violence was followed, first, by a lengthening of the limb to the extent of an inch, with an increase of its circumference, and subsequently by a considerable shortening, with inversion of the limb, but unaccompanied by inflammatory changes in the surrounding soft parts. In a memoir published by M. Vrolik of Amsterdam * there is an account of the examina-

* Essai sur les effets produits dans le corps humain par la luxation congenitale et accidentelle non reduite du femur.

tion of the hip-joint of a young female, in which dislocation of the head of the femur upwards and backwards had occurred, with elongation of the capsule and destruction of the ligamentum teres. The acetabulum was found contracted, of a triangular form, and filled with a yellow, soft, and lobulated substance, which was apparently the adipose and cellular tissue existing naturally at the bottom of the acetabulum in a state of hypertrophy.

In addition to the variety of circumstances under which, in the cases herein related, elongation of the ligaments of the hip-joint has taken place, we may note the occurrence of such a change in early life as a consequence of efforts repeatedly made to place the thighs in positions not permitted by the hip-joints in their natural and healthy condition. A boy aged 18 was sent to St. Bartholomew's Hospital, in whom the following particulars were observed. His muscular system was remarkably well developed. When standing erect, he could, by the action of the muscles, throw the head of either femur out of its socket to the back of the pelvis, where it was felt projecting as in the ordinary dislocation from external violence, and as readily, still standing erect, he could, by renewed muscular effort, throw the head of each bone back again into its socket. It was remarkable that with such a degree of motion in the hip-joints, neither the firmness of his erect position, nor his power of progression, was in any degree impaired. We learned that he had been exhibiting feats at a country fair.

It might be suggested that in a proportion of such cases as have been related, the primary injury was a rupture of the ligamentum teres, the yielding of the capsule, with its attendant deformity and lameness, then in consequence taking place. But there are several facts opposed to such a conclusion. First, we may allude to the natural varieties in the condition of the ligamentum teres. Often, in the adult, it consists merely of a fold of synovial membrane enclosing no fibrous tissue, when, therefore, it can contribute very little to the security of the joint, and on which account the office of this interarticular ligament was thus described by Palletta in his Exercitationes Pathologicæ: "Munus ligamenti aliud non esse quam illud, vasa nempe sanguinea intra funiculi caveam dirigere eaque protegere." Secondly, we may observe that in the instances of congenital deficiency of the ligamentum teres recorded by Palletta, Bonn, Sandifort, and Caldani, it is stated there was no lameness. Thirdly, we know that in dislocations of the hip from external violence, the ligamentum teres is in general torn completely across near its attachment to the head of the femur, and yet in a few weeks afterwards, with the closure of the laceration in the capsule, the functions of the joint are perfect; it may, I think, be safely affirmed, without a re-union of the torn interarticular ligament.

With a lengthening of the capsule of the hip-joint, it is unlikely that the head of the femur would be displaced in any other direction than upwards

and backwards, with a corresponding shortening of the limb, the action of the more numerous and powerful muscles tending to this result; and it may be presumed, that the precise situation of the head of the bone will then be between the glutæus minimus muscle and the dorsum of the ilium. An exception to this would occur in the yielding of the capsule consequent on a paralytic condition of the muscles, when an increased length of the limb may be its permanent character, as in the second case which has been related. With the lengthening of the capsule and the passage of the head of the femur upwards and backwards to the dorsum of the ilium, there may be inversion or eversion of the limb, or no inclination of it to one or other position. Whether these differences depend on the condition of the ligamentum teres, as this may be elongated or removed, future observation must determine. It will be remarked, that in the majority of the cases which have been related, the displacement of the head of the femur occurred so gradually, and with such a freedom from uneasiness in the part, that the patient was wholly unaware that changes so important were in progress; in fact, there was no suspicion of them before the discovery that the dislocation had actually taken place. The remarkable mobility of the limb in most of these cases is also to be noticed, as another distinctive character of these displacements when contrasted with the ordinary dislocations of the hip-joint consequent on external violence, or on disease.

In illustration of the foregoing statements, I refer to two preparations contained in the Museum of St. Bartholomew's Hospital; one of these exhibits an elongation of the capsule of the hip-joint with destruction of the ligamentum teres; the other exhibits elongation of the capsule and of the ligamentum teres, with the growth of fringe-like membranous processes from the internal surface of the elongated capsule. These preparations are represented in Plate IV. of the present volume.

OBSERVATIONS

ON THE

ANATOMY OF THE LUNGS.

By THOMAS ADDISON, M.D.,

PHYSICIAN TO GUY'S HOSPITAL.

READ APRIL 23RD, 1841.

Many others must have felt as I do, that it requires some nerve to make a demand upon the time and attention of such a Society as this; they must have been conscious, as I am, that however interesting or apparently important the intended communication may have been in their own estimation, it may, nevertheless, be deemed by the Society at large, altogether unworthy the character and experience of the majority of its members. On the present occasion, I hardly know whether such apprehensions ought to be diminished or enhanced by the brevity and incompleteness of this communication: its brevity and incompleteness being almost a necessary consequence of its subject, forming a mere part or portion of the results of a much more extended inquiry into the healthy and morbid anatomy of the

lungs,—an inquiry by far too extensive, and of too much practical importance, to be quickly accomplished, or hastily presented to the notice of the profession.

In the presence of any body of professional men in any part of the world, but especially in our own country, it would be in exceedingly bad taste to insist upon the importance of all and every thing appertaining to either the healthy or morbid anatomy of the lungs; nor would it be less superfluous to add any thing to what has been so repeatedly urged in proof of the necessity of acquiring an intimate knowledge of the former, in order clearly to understand and satisfactorily to demonstrate the latter; it is not, however, by any means so certain that the converse of this familiar proposition has met with its full and legitimate share of attention; it is by no means so apparent that morbid anatomy has been sufficiently rendered available to explain or demonstrate the function or structure of obscure, intricate, and complicated parts of the body in a state of health. For my own part, if I may be pardoned the egotism, I would venture to express my belief that very much assistance indeed may be derived from this source; whilst, on the other hand, the increase of knowledge thus acquired respecting healthy anatomy, prepares us for still further advances in the investigation of changes induced by disease.

Proceeding on this principle of rendering healthy and morbid anatomy mutually subservient to the

elucidation of each other, I am not without a hope that I have succeeded in illustrating, if not in demonstrating, certain points of great interest as regards the lungs, some of which have already been pretty generally established, whilst others are familiar as mere matters of opinion, or are perhaps altogether novel. The results of my investigations, for example, seem to prove almost beyond dispute, 1st, that the aeriel cellular tissue of the lungs is made up of well-defined, rounded, or oval lobules, united to each other by interlobular cellular membrane, each lobule constituting a sort of distinct lung in miniature, having its own separate artery and vein; 2ndly, that these lobules do not communicate directly with each other; 3rdly, that they do not, as Reissessen and others have supposed, consist of the globular extremities of as many bronchial tubes, but, on the contrary, as my friend Dr. Hodgkin has suggested, are made up of a collection of cells, in which, by a common opening, a minute filiform bronchial tube abruptly terminates; 4thly, that the pulmonary artery accompanies the bronchi, branch for branch, to the minutest divisions of the latter; 5thly, that pneumonia consists essentially in inflammation of the aeriel cells; 6thly, that pneumonia and inflammatory tubercle are identical; 7thly, that acute pneumonia in moderately good constitutions scarcely ever leads to the formation of an abscess, unless deposit previously existed; but that when it occurs in cachectic or broken down constitutions, or supervenes in the process of chronic or organic diseases,

it occasionally causes one or more distinct and separate lobules to soften down into an ill-conditioned abscess; 8thly, that ordinary tubercles present the same varieties in the lungs, as they do in serous membranes; 9thly, that emphysema of the lungs consists chiefly of mere dilatation of the cells, but in part also sometimes of more or less extensive laceration of them; and lastly, that the circumscribed gangrene of Laennec is commonly, if not uniformly, a mere effect or advanced stage of pulmonary apoplexy. It is not, however, to any of these matters that I presume to solicit attention at present, my object, on this occasion, being merely to point out a mode of distribution of the pulmonary vein, which, so far as I know, has not been noticed by any preceding anatomist or pathologist, and which, on that account, I have thought would prove not unacceptable to the members of this Society.

The uncertainty and discrepancy which at present prevail respecting the origin and course of the pulmonary vein, may be gathered from the descriptions given of it in the works of some of the most distinguished modern authorities; the quotations of a few of which may not perhaps be altogether superfluous or misplaced here.

Cloquet, in his large work, *Anatomie de l'homme*, sec. 509, observes, "Les dernières ramifications de l'artère pulmonaire donnent naissance aux radicules des veines du même nom. Ces veines, qui augmentent successivement de volume, *marchent à côté et au-dessous des artères correspondantes*," &c. &c.

Meckel, in his *Manuel d'Anatomie* translated and amended by Jourdan and Breschet, tom. iii. p. 518, in speaking of the lungs, says, " Dans l'interieur de l'organe, les veines pulmonaires accompagnent les ramifications bronchiques de plus près que les artères." Adelon, again, in his *Physiologie de l'homme*, seconde edition, tom. iii. p. 147, on the subject of the pulmonary veins, observes, " Ces veines commencent par des radicules qui sont aussi inapercevables, et par consequent aussi peu connus que les dernières ramifications des bronches et de l'artère pulmonaire : *disséminés dans le parenchyme du poumon*, peut-être continus aux ramifications de l'artère pulmonaire. *Situés probablement aux mêmes lieux où aboutissent ces ramifications et celles des bronches*, et où se fait la respiration," &c. &c. Ollivier, in the article Poumon, of the *Dictionnaire de Médecine*, observes, " Que les troncs des artères et des veines pulmonaries penètrent dans le poumon et en sortent par le même point, *et que les ramifications des veines pulmonaires sont plus voisines des canaux bronchiques que celles des artères pulmonaires.*" Bichat,* on the same subject, speaks thus ; " Les veines pulmonaires nées du système capillaire de ces organes, *suivent une direction analogue à celle des divisions artérielles. Voisines, dès leur origine, des ramuscules aériens, elles n'abandonnent jamais ces conduits dans leur trajet. Elles se réunissent successivement en rameaux plus volumineux que l'on trouve*

* Anatomie Descriptive, tom. iv. p. 65.

toujours appliqués sur des rameaux bronchiques d'un volume proportionné. Ordinairement la veine est inferieure à la bronche, tandis que l'artère lui est superieure; c'est du moins ce que l'on trouve tant que l'œil peut suivre ces vaisseaux."

In none of the accounts given by these high authorities do I discover the slightest allusion to the mode of distribution of this important vessel, which my own dissections appear so clearly and unequivocally to demonstrate; but, on the contrary, find them to be totally at variance with it.

In order to accomplish this demonstration, the pulmonary artery was injected with size, coloured red, whilst the vein was injected with the same material, coloured yellow: the lung was then laid aside and kept moistened in a cool place for several days, with the view of softening, by approaching decomposition, the connecting cellular membrane distributed throughout the lungs. In this way the common cellular membrane beneath the pleura became so lacerable that the pleura itself was stripped off without much difficulty, and without inflicting any breach whatever in the aeriel cellular structure of the lung, which it had covered. The lung thus divested of its pleura, presents to the eye, more or less distinctly, lines on its surface, which indicate the situation of what may be called the *pulmonary fissures*—a term more correctly applicable than that of interlobular, inasmuch as by the term interlobular is usually understood a something situated between either the longer lobes or smaller lobules; whereas

by the term *pulmonary fissures*, is meant certain spaces, occupied by common cellular membrane, and which descend from the surface towards the interior, but without penetrating the aeriel cellular tissue of the lung; thereby dividing more or less deeply the surface of the organ into a number of insular portions, some of which may comprise a great number of lobules. Guided by the linear indications on the surface of the now naked lung, we can in general, with the aid of a pair of points let into handles, or a pair of fine scissors, and without much difficulty, succeed in laying open and exposing the pulmonary fissures, at the bottom of which, merely surrounded by a loose cellular membrane, and resting on the unbroken aeriel pulmonary tissue, we discover a vessel; that vessel is the pulmonary vein, alone, and unaccompanied by any artery whatever. This vessel may be distinctly traced from larger to smaller trunks towards its source, until we reach the common cellular membrane between the ultimate lobules, from the exterior of which the vein appears to originate; whilst on the other hand, by continuing the mechanical operation towards the root of the lungs, we, with almost equal facility, trace the vessel, still lying at the bottom of the pulmonary fissures, and becoming gradually larger and larger by the addition of branches, which proceed into the pulmonary fissure, and are derived either from the neighbouring smaller pulmonary fissures, or from the uniting cellular membrane between the ultimate lobules themselves, until at length it joins

the large trunks at the root of the lungs, to form the great pulmonary veins. A small artery is not unfrequently observed running across the pulmonary fissures, from a portion of lung on one side to a portion of lung on the other; and in one instance I have found an exceedingly narrow strip of healthy lung passing like a bridge across the fissure, on the very surface of the lung.

Thus, then, the human lung may be said to be made up essentially of a vast expanse of membrane, the interior of which, during the whole of extra-uterine life, is unceasingly exposed to the influence of atmospheric air, and upon the surface or in the substance of which are spread out the capillary ramifications of the pulmonary artery; these arterial capillaries passing from thence to the exterior of the membrane, to form the pulmonary vein, which throughout its whole course is found to be situated on the exterior of the aeriel cellular structure of the organs.

It is unwise to be too sanguine, yet I cannot help indulging a hope, that with a knowledge of this striking and distinct distribution of the pulmonary vein, we shall be more successful in our investigations into some of the most interesting and important diseases of the lungs; that it will be the means of throwing additional light on the origin and progress of that fatal scourge, phthisis pulmonalis; and that it will enable us, almost without a doubt or difficulty, to set at rest the long-agitated questions respecting the origin and seat of pulmonary apoplexy, and more

especially of what has been called œdema pulmonum, or dropsy of the lungs. In these investigations I am at present engaged, and may take the liberty of adding, that for the future I hope to have the co-operation of my friend and colleague Mr. Hilton, demonstrator of morbid anatomy at Guy's Hospital, to whom I am already much indebted, and from whose extensive acquirements both as an anatomist and pathologist, I anticipate much assistance and instruction.

RESULTS OF AMPUTATIONS

AT

UNIVERSITY-COLLEGE HOSPITAL, LONDON,

STATISTICALLY ARRANGED.

By JOHN PHILLIPS POTTER, Esq.,

LATE HOUSE-SURGEON.

WITH SOME REMARKS ON THE MODE OF AMPUTATION AND METHOD OF DRESSING THERE ADOPTED, BY ROBERT LISTON, ESQ.

Communicated by Mr. LISTON.

READ MAY 11TH, 1841.

Considerable attention has lately been drawn to the results of amputation generally, and to the comparative results of primary and secondary amputations in particular; and several able papers have appeared in the periodicals, containing more or less extensive statistical returns of cases treated at civil and military hospitals.

As the only chance of arriving at any safe and satisfactory conclusions in medical statistics depends on the number and accuracy of reports and cases from which such conclusions are to be drawn, it is of importance that as many of these should be collected as possible, from authentic sources, and particularly where the reports were taken during the progress of such cases.

Much interesting information might thus be obtained from the records of our metropolitan and larger provincial hospitals; and if these were made public from time to time, the profession would be put in possession of a mass of facts which would afford valuable data, from which many practical inferences and useful rules might hereafter be derived.

With this persuasion I have examined the Report-Books of University-College Hospital, and collected all the cases in which amputation has been performed, since the opening of the Institution, on the shoulder, arm, fore-arm, wrist, thigh, and leg.

These I have arranged in the form of tables, which, at the suggestion of my kind friend Mr. Liston, I venture to lay before this Society; and that gentleman has added some remarks on the mode of amputation which has been adopted, and the method of dressing which has been observed.

Though the period of time over which these observations extend is very limited (the first of the amputations having been performed no longer since than June 1835); and though the number of cases is consequently small, yet, as the series is complete as far as it goes, and as the cases have been treated on the same principles, and have been placed as nearly as possible under similar circumstances, it is hoped that this small contribution to surgical statistics may prove not entirely without interest.

The number of cases of amputation in the University-College Hospital, from the last day of June 1835, to the termination of the year 1840, a period

of six years and a half, has been 66, and of these, 56 have proved successful, whilst 10 have been attended with fatal results, at a variable period of time after the performance of the operation.

Of the 66 cases, 11 were subjected to amputation on account of severe compound fractures, and other injuries, the operations having been performed within 24 hours after the occurrence of the accident.

Out of these 11 cases of primary amputation, 3 terminated fatally, one in 7 days, one in 11 days, and one after the lapse of 48 days. The first of these fatal cases was of an unusually severe character, the patient having received, on the Birmingham Railway, compound fracture of both legs, fracture of the humerus, fracture of the ribs, and several severe contusions. In this instance both legs were removed, one in a few hours after the receipt of the injury, and the other a few days afterwards, in consequence of traumatic gangrene.

Seven out of the 11 cases recovered, and the stumps were healed completely, after the following times :—in 23 days, 30 days, 35 days, 48 days, 61 days, 75 days, and 1 after 146 days.

Table I. gives the parts which were amputated, and the results in each ; from which it would appear that amputations on the lower extremity are, as might be expected, more dangerous to life than those of the upper extremity.

TABLE I.

	Cases.	Cured.	Died.
Arm	1	1	0
Fore-arm	2	2	0
Wrist	1	1	0
Thigh	2	1	1
Leg	3	2	1
Both Legs	1	0	1
Total	10	7	3

Proportion of Deaths barely 1 *in* 3 *cases.*

In the remaining 56 cases, amputation was performed on account of long-standing disease, or for injuries in which an attempt was made to save the limbs. Of this number, only seven died, giving a proportion of one death out of 8 cases.

Tables II. and III. give the parts at which amputation was performed, the nature of the different cases, and their results, together with the proportion of deaths under these different circumstances.

TABLE II.—56 *Cases of Secondary Amputation.*

	Number of Cases.	Cured.	Died.	Prop. of Deaths.
Shoulder	1	1	0	
Arm	7	5	2	1 in $3\frac{1}{2}$
Fore-arm	6	6	0	
Thigh	20	17	3	1 in $6\frac{2}{3}$
Leg	22	20	2	1 in 11
Total	56	49	7	

TABLE III.—*Nature of the* 56 *Cases of Secondary Amputation.*

Nature of Case.	No. of Cases.	Cured.	Died.	Prop. of Deaths.
Diseased joints	33	28	5	1 in $6\frac{3}{5}$
Disease of soft parts . . .	9	8	1	1 in 9
Compound fracture . . .	6	5	1	1 in 6
Ulcerated and conical stumps .	4	4	0	none.
Necrosis	3	3	0	none.
Tumour of bone	1	1	0	none.

TABLE IV.—*Ages of* 66 *Cases of Amputation.*

	No. of Cases.	Cured.	Died.	Prop. of Deaths.
From 3 to 10 years . . .	6	6	0	none.
From 11 to 20 years . . .	16	13	3	1 in $4\frac{1}{3}$
From 21 to 30 years . . .	17	15	2	1 in $7\frac{1}{2}$
From 31 to 40 years . . .	10	7	3	1 in $2\frac{1}{3}$
From 41 to 50 years . . .	9	7	2	1 in $3\frac{1}{2}$
From 51 to 60 years . . .	3	3	0	none.
From 61 to 70 years . . .	4	4	0	none.
From 75 years	1	1	0	none.

Mode of Amputation.—In all the cases above mentioned, the flap amputation has been preferred as an operation which, it is believed, is not only more quickly performed, and with much less suffering to the patient, but is attended altogether with better results both as regards the form of the stump and the

rapidity of its cure. The instrument used for the operation is a straight-backed knife, with an edge gently curving towards the point, and of a length varying with the size of the limb to be removed.

With only one exception, (in which the ordinary tourniquet was applied,) the artery of the limb was commanded by the fingers of an assistant, compression being made with moderate firmness over the axillary or brachial arteries in amputations on the upper extremity; and over the upper part of the femoral artery in operations on the lower limb.

It is found that very little blood is lost when this plan is adopted, because well-directed pressure immediately over the course of the principal artery of the limb completely arrests the flow of blood through that vessel and its offsets, whilst it does not in the least interfere with the return of blood by the veins, which, from their thinner parietes, are the first vessels to be compressed when the tourniquet is applied.

After the removal of the limb also, when the principal arteries have been tied, the smaller vessels are quickly and easily secured by slightly varying the pressure of the finger.

Another advantage derived from this mode of arresting the flow of blood through the limb, is that the operation itself is more conveniently performed than when the tourniquet is used. When both flaps have been cut, they are forcibly retracted by an assistant, whilst by a few sweeps of the knife the bone is denuded for some distance, and sawn through

considerably above the point at which the first puncture in the skin was made. Now where a tourniquet is employed, the retraction of the flaps must be interfered with, to a great extent; but where pressure is made by the fingers only, and the rest of the limb is left free, this part of the operation is performed with perfect ease, and the motion of the saw, when applied close against the divided muscle, is not interfered with.

With regard to the method of performing the particular amputations, little need be said. In the case of the upper-arm, an external and an internal flap are made by transfixing on either side of the bone, and cutting from within outwards. The deep muscles are then separated from the bone, which is sawn through about an inch above the point at which the knife was entered at the commencement. In the case of the fore-arm however, it is found most convenient to make the first flap by cutting from the skin towards the bone, on the posterior aspect of the limb, and then transfixing beneath the mass of flexor muscles, and cutting an anterior flap from within outwards.

In amputation of the thigh, with one exception, in which Mr. Cooper pursued the plan of making lateral flaps immediately above the knee-joint, the flaps have generally been formed in such a manner that the line of union is directly across the limb.

The two flaps are made as nearly as possible of the same breadth and thickness; but the posterior one is made longer than the anterior one, in order

that (in the ordinary semiflexed position of the stump) the bone may be easily covered, without any undue stretching of the parts.

The femur is, in most cases, sawn through about the middle of the shaft, or only slightly below that point; both on account of the more complete manner in which the stump is received by the socket of the wooden leg, and because at the middle of the thigh a better cushion is formed by the soft parts around the bone.

Amputations of the thigh have been by no means uncommon; and (considering the size of the limb removed, compared with that of the whole body) very successful. Out of 22 cases, (2 primary, and 20 secondary,) only 4 deaths occurred.

Nearly all the amputations of the leg were performed close to the tuberosity of the tibia, the stump being left only of sufficient length to rest firmly on the cushion of the wooden leg.

The stump is then completely covered by the dress; and, as it does not project much, it is not so liable to injury, or to become the seat of obstinate and painful ulceration, as is the case with stumps made at the middle of the leg or even a little higher.

Here again the ordinary flap amputation has been had recourse to; a short anterior flap of skin being first made by dividing the skin over the upper end of the tibia in a semicircular form, and then the knife being made to transfix the leg, (at a variable distance behind the tibia and fibula, according to

the size and degree of muscularity of the limb,) in order to form a suitable posterior flap.

The portion of muscle thus taken into the posterior flap gives a firmness and roundness to the stump when healed; and does not, in most cases, increase the amount of suppuration, or retard the union of the parts. The only cases in which this mode of amputation is inconvenient, are those in which the patient is muscular and in robust health; as in primary amputations for severe injuries, for example. Under these circumstances the muscles do not appear to have the same power of retraction as in patients who have long been in a low state of health. They are therefore much in the way when the stump is dressed; and by projecting beyond the skin, they prevent its union by the first intention, and occasionally cause some sloughing of the parts.

In two cases where, from the muscularity of the patient, this inconvenience was anticipated, Mr. Liston varied the operation in the following manner.

The anterior flap was made longer than usual, by curving the incision downwards in a semilunar form, and reflecting the skin from the front of the tibia. A posterior flap was then made, also of skin only, and of about the same length as the anterior one. This was reflected from the surface of the gastrocnemius, and the deep structures divided down to the bones, which were separated from the muscles for a short distance before being sawn through.

In these cases the skin flaps healed with unusual rapidity; and the stumps were neat and well co-

vered. In one case, union took place almost entirely by the first intention, and the patient was discharged cured in 25 days after the performance of the operation.

From the accompanying list it would appear that amputation of the leg is an operation which is not so frequently dangerous to life as might be expected. Out of 25 cases, 22 secondary and 3 primary, 22 were successful, giving a proportion of about 1 fatal case out of every 8.

This however does not accord with the returns of all hospitals.

Dr. Lowrie, in a paper published lately in the Medical Gazette, giving the results of amputations at the Glasgow Royal Infirmary since the commencement of that institution, recommends that the flap amputation immediately below the knee should be abandoned, as a very dangerous and frequently fatal proceeding.

He remarks that "of the more common amputations, that below the knee is the least favourable;" and he adds, that the returns from the Glasgow Infirmary, "by pointing out the danger of the common method of operating, should induce us never to remove more of the limb than will insure that the parts which form the stump are sound; and in *all* cases except those of necessity, to abandon the operation *below the knee.*"

These observations have reference principally to amputations for disease; and it appears that out of 35 cases operated on in the Glasgow Infirmary, 12

died; being a proportion of about 1 death in 3 cases.

This great mortality, however, cannot altogether depend on the particular kind of operation had recourse to, because out of 22 cases of secondary amputation of the leg, in University College Hospital, 20 were cured, giving a proportion of 1 death in 11 cases; by no means an unfavourable proportion.

Neither have these generally been found tedious cases; union by the first intention occurring frequently along half and sometimes nearly three-fourths of the line of meeting of the flaps, and the remaining portions granulating without any great amount of suppuration. The average period of time which these patients remained in the hospital before their stumps were completely healed was from forty to fifty days.

Since, then, the high amputation is not necessarily more dangerous and fatal in its consequences than the operation below the middle of the leg, it does appear, at least in hospitals, to be on the whole the one to be preferred; for though a long stump may be more convenient for the instrument-maker to adapt artificial limbs to, yet to patients who are obliged to wear the common wooden pin, and labour for their living, it is found a very useless and frequently a much worse than useless appendage. As it projects far behind the other limb, it is constantly liable to injury; and after a time becomes ulcerated and irritable. The bone itself sometimes inflames, and the part becomes extremely painful and tender.

This prevents the patient from pursuing his usual employments; and hence several have applied at the hospital who have been anxious to undergo a second amputation rather than suffer the pain and inconvenience of their former state any longer.

Mode of dressing the stump.—When ligatures have been tied around the principal arteries of a stump, the hæmorrhage from the smaller vessels (which are also tied in cases where the dressing is proceeded with immediately) is arrested by covering the recently-divided surfaces with lint, soaked in cold water.

This is removed and re-applied every few minutes at first, and then at longer intervals, until all bleeding has ceased; and in order to insure the actual application of the cold water to the bleeding surface, the coagula are from time to time gently removed. When the patient begins to recover the shock of the operation, one or two of these smaller arteries perhaps spout out afresh. These, however, if necessary, are easily secured, as the flaps are still separate and exposed: the greater number of vessels, on the contrary, become plugged up with fibrine, and retract within their sheaths.

Thus all chance of disturbance of the dressing, by effusion of blood between the flaps, is prevented; and that without having so many sources of irritation present in the stump, as when many vessels are secured by ligature.

Much has been said about the pain which this application of cold produces; but if done with the

care and gentleness which should always be used in such cases, it is seldom much complained of. Where the patient is unusually nervous and susceptible of pain, tepid water, changed more frequently, may be used in a similar manner.

When all oozing of blood has ceased, and when the divided surfaces become glazed over, (which happens generally in from four to seven hours after the operation,) the wet lint and small remaining coagula are removed, and the dressing of the stump proceeded with. The flaps, which are in the most favourable state for union, are now brought accurately together, and retained by several points of interrupted suture. The number of sutures requisite for this purpose varies from two to four; but more than three are seldom used, even in amputation of the thigh. They are removed frequently in twelve or twenty-four hours; but if the flaps are large and heavy, and the threads cause no redness in the neighbouring skin, they may be left for several hours longer, to prevent any dragging on the recent adhesions. When the flaps are thus in apposition, the edges are more closely brought together by means of strips of plaster applied over the face of the stump, at a little distance from each other, so as to allow of the ready escape of discharge, and the abstraction of the sutures when necessary.

Instead of using, for this purpose, the ordinary resinous plaster, which is a dirty application, readily loosened by discharge, and frequently causing irritation and erythema of the skin, a far more convenient

material is found in oiled silk or gold-beater's skin, spread with a solution of isinglass, which is allowed to dry. This plaster is sufficiently firm and tough to support the heaviest flaps; it is very adhesive, and being impervious to water, remains for many days without becoming detached; it does not irritate the skin; and, lastly, as it is quite transparent, the line of union may be seen distinctly through it, and additional support may, at any time, be given to a particular part, where it is seen that the lips of the wound are separating. This dressing is found perfectly sufficient for the first three or four days, or even longer in some cases; the stump being kept gently elevated on cushions covered with oiled silk. No bandage is applied at first, but the stump is left uncovered and cool.

In general, very little inflammatory swelling takes place under these circumstances, and what little does occur is not accompanied with pain, because there is nothing to constrict the parts, and prevent their enlargement.

A bandage is seldom applied before the third or fourth day, though occasionally it is made use of earlier, where the stump is large and heavy, and the union by the first intention not as extensive as usual.

At first, however, the roller is not brought over the face of the stump, but is only allowed to approach the end by circular turns. By this means the discharge is not confined, and the strips of plaster are left undisturbed, these being quite suffi-

cient to prevent the lips of the wound from separating.

When suppuration is fairly established in those parts of the stump which have not united by the first intention, the plaster is usually removed, either entirely or in part, and the end of the stump dressed with lint dipped in tepid water, or in a gently-stimulating lotion, and covered with oiled silk. The bandage also is then brought over the end of the stump in such a manner as to support the flaps together, as the plaster hitherto has done. This simple kind of dressing has the advantage of being cool and clean: and as it may be easily removed, without much pain to the patient, it may be renewed daily.

Secondary hæmorrhage.—One of the favourite objections to the method of amputating by flaps, is, that the vessels are divided obliquely, and that secondary hæmorrhage is consequently a more common occurrence, because the ligature, when tightened, does not bring together opposite parts of the artery. Whether this is a practical or merely a theoretical objection, can only be determined after comparing a considerable number of statistical returns of the results of the two different modes of operation.

In the sixty-six cases here collected, two instances occurred; both in amputation of the thigh. In one case the hæmorrhage proved fatal, as the patient was reduced to an extremely low state, by purulent discharge from the knee-joint, before he consented

to amputation. The other patient recovered, after having, first the femoral and then the external iliac artery ligatured.

As this case was one of considerable interest, as illustrating a kind of hæmorrhagic tendency, which is probably dependent on a diseased state of the vessels, though such cannot be demonstrated, I may conclude these few remarks by a slight sketch of its principal features.

The patient, a swarthy middle-aged man, was admitted January 28th, 1839, with an immense ulcer over the front of the leg, which had existed for several years, and occasionally bled to a very considerable extent. There was also solid œdema of the lower part of the leg and foot, the skin and cellular tissue being greatly hypertrophied, and the epidermis developed into a kind of horny crust, similar to ichthyosis.

Though the foot was nearly twice its natural size, it was perfectly hard, and did not pit on pressure. The patient was prevented from working, and was beginning to lose his strength and appetite, when he applied, anxious to be relieved of his useless limb.

On the 4th of February he submitted to amputation of the thigh, the ulcer being too extensive to allow of the formation of sound flaps in the leg.

On the 12th of February, eight days after the amputation, secondary hæmorrhage occurred, which was, however, stopped by cold and pressure.

On the *following day* (13th) bleeding recommenced, but with much greater violence. Accord-

ingly a ligature was placed round the femoral artery, just below Poupart's ligament.

On the 15th of February hæmorrhage to the amount of several ounces took place from a small artery (superficial external pudic), wounded in the operation of tying the femoral.

On the 27th of February the ligature came away from the femoral artery, without any bleeding, having been on only fourteen days.

On the 15th of March rapid bleeding occurred from the wound in the groin, which had nearly closed. This was for a time arrested by compression; but in the evening it again returned, and as the patient was excessively weak from a sloughing back, the external iliac artery was tied, as a last resource.

The *following day* several ounces of blood were again lost from the wound in the groin, but this was the last time of its occurrence.

On the 1st of April the ligature separated from the iliac artery, and the wound healed slowly but gradually. The patient after this by degrees recovered his strength and health, and was discharged the 5th of August 1839. He showed himself at the Hospital about a twelvemonth afterwards, in excellent health, apparently, and in full work.

List of Amputations in University College Hospital, from June 1835 *to January* 1841.

MALE CASES.

No.	Name of Patient.	Age.	Nature of the Case.	Part amputated, and by whom.	Date of Operation.	Result.	Date of Discharge or Death.	No. of Days.
1	O'Daly, Martin.	50	Painful and conical stump.	Fore arm, Mr. Liston.	June 30, 1835.	Cured.	Aug 5, 1835.	36
2	Philips, John.	32	Compound fracture of leg, October 24	Leg, secondary, Mr. Liston.	Nov. 16, 1835.	Cured.	Dec. 19, 1835.	33
3	Church, Jasper.	50	Disease of bones of foot.	Leg, Mr. Liston.	July 1, 1836.	Cured.	Sept. 1, 1836.	62
4	Fenning, James.	13	Painful stump.	Thigh, Mr. Liston.	Dec. 2, 1836.	Cured.	Jan. 2, 1837.	32
5	Smith, Henry.	23	Disease of ankle.	Leg, Mr. Liston.	Dec. 5, 1836.	Cured.	Not entered.	—
6	Miles, Daniel.	4	Disease of ankle.	Leg, Mr. Liston.	March 22, 1837.	Cured.	April 12, 1837.	21
7	Dixon, John.	61	Diseased wrist.	Fore arm, Mr. Liston.	April 20, 1837.	Cured.	Not Entered.	—
8	Brewer, Francis.	18	Diseased elbow.	Fore arm, Mr. Quain.	May 4, 1837.	Cured.	June 24, 1837.	51
9	Whetstone, Thomas	45	Ulcer of leg.	Leg, Mr. Liston.	April 5, 1837.	Died.	May 14, 1837.	39
10	Dyer, Henry.	13	Diseased ankle, necrosis of tibia.	Leg, Mr. Liston.	April 5, 1837.	Cured.	Not Entered.	—
11	Hennell, William.	29	Compound fracture of the leg.	Thigh, primary, Mr. Liston.	June 23, 1837.	Cured.	Aug. 10, 1837.	48
12	Backer, George.	21	Compound fracture, &c. of arm.	Fore arm, primary, Mr. Cooper.	Aug. 1, 1837.	Cured.	Aug. 31, 1837.	30
13	Millet, William.	14	Necrosis of tibia.	Leg, Mr. Liston.	Aug. 18, 1837.	Cured.	Oct. 4, 1837.	46
14	Eyres, George.	37	Compound fracture and contused hand.	Wrist joint, primary, Mr. Liston.	Aug. 24, 1837.	Cured.	Sept. 29, 1837.	35

No.	Name of Patient.	Age.	Nature of the Case.	Part amputated, and by whom.	Date of Operation.	Result.	Date of Discharge or Death.	No. of Days.
15	Hesson, James.	19	Compound fracture, with severe laceration of leg and foot.	Thigh, primary, Mr. Liston.	Sept. 18, 1837.	Died.	Nov. 5, 1837.	48
16	Robinson, George.	31	Compound fracture of both legs, of humerus and other injuries.	One leg, primary, Mr. Liston. Other leg, secondary, Mr. Quain.	Nov. 4, 1837.	Died.	Nov. 11, 1837.	7
17	Compton, Henry.	25	Compound fracture of leg.	Leg, primary, Mr. Liston.	Dec. 30, 1837.	Cured.	May 22, 1838.	146
18	Lee, Charles.	39	Diseased knee.	Thigh, Mr. Liston.	Jan. 8, 1838.	Cured.	March 30, 1838.	83
19	Davis, Thomas.	51	Diseased knee.	Thigh, Mr. Cooper.	Jan. 11, 1838.	Cured.	March 12, 1838.	62
20	Hellaby.	23	Scrophulous disease of ankle.	Leg, Mr. Liston.	March 1838.	Cured.	—	—
21	Seabright.	43	Diseased ankle.	Leg, Mr. Liston.	April 20, 1838.	Cured.	June 2, 1838.	43
22	Earp.	63	Diseased wrist and bones of hand.	Fore-arm, Mr. Liston.	Oct. 15, 1838.	Cured.	Dec. 1, 1838.	47
23	Tuck.	26	Diseased ankle-joint, &c.	Leg, Mr. Liston.	Oct. 15, 1838.	Cured.	Nov. 30, 1838.	46
24	Cater.	30	Disease of knee from lacerated wound, Nov. 18.	Thigh, secondary, Mr. Liston.	Dec. 7, 1838.	Died.	Dec. 31, 1838.	24
25	Smart.	45	Contusion and laceration, &c., of hand and wrist, fracture, &c.	Fore arm, primary, Mr. Quain.	Jan 4, 1839.	Cured.	Feb. 30, 1839.	61
26	Woodroffe.	45	Old ulcer, and solid œdema of leg and foot.	Thigh, Mr. Liston.	Feb. 4, 1839.	Cured.	Aug. 5, 1839.	182
27	Dance.	3	Diseased elbow.	Upper arm, Mr. Liston.	Mar. 15, 1839.	Cured.	April 17, 1839.	33
28	Reed.	11	Diseased ankle-joint.	Leg, Mr. Liston.	Mar. 21, 1839.	Cured.	April 29, 1839.	39
29	Fox.	27	Disease of carpal bones.	Fore-arm, Mr. Liston.	May 29, 1839.	Cured.	July 12, 1839.	44

No.	Name of Patient.	Age.	Nature of the Case.	Part amputated, and by whom.	Date of Operation.	Result.	Date of Discharge or Death.	No. of Days.
30	Steele.	18	Severe fracture and laceration of leg and foot.	Leg, primary, Mr. Liston.	Sept. 6, 1839.	Cured.	Nov. 20, 1839.	75
31	Lyon.	28	Compound fracture of femur, September 2.	Thigh, secondary, Mr. Cooper.	Oct. 5, 1839.	Died.	Oct. 24, 1839.	19
32	Bentley.	11	Scrophulous disease of foot.	Leg, Mr. Liston.	Sept. 13. 1839.	Cured.	Oct. 19, 1839.	36
33	North.	32	Painful and conical stump of thigh.	Thigh, Mr. Liston.	Dec. 19, 1839.	Cured.	Jan. 27, 1840.	39
34	Blackmore.	40	Disease of elbow and fore-arm.	Upper-arm, Mr. Liston.	Jan. 20, 1840.	Died.	March 1840.	—
35	Bruce.	40	Disease of elbow-joint.	Upper-arm, Mr. Liston.	Jan. 31, 1840.	Died.	Feb. 2, 1840.	2
36	Nicholson.	46	Compound fracture of leg.	Leg, primary, Mr. Cooper.	Feb. 17, 1840.	Died.	Feb. 28, 1840.	11
37	Clavidge.	64	Extensive ulcer of leg, &c.	Leg, Mr. Quain.	March 21, 1840.	Cured.	June 26, 1840.	97
38	Wright.	60	Malignant ulcer of leg.	Thigh, Mr. Liston.	June 24, 1840.	Cured.	Aug. 20, 1840.	57
39	Lay.	18	Diseased ancle.	Leg, Mr. Quain.	June 30, 1840.	Cured.	July 31, 1840.	31
40	Redding.	40	Diseased knee.	Thigh, Mr. Quain.	Aug. 5, 1840.	Cured.	Sept. 12, 1840.	38
41	Willis.	42	Compound fracture of leg, June 29.	Leg, secondary, Mr. Liston.	Sept. 2, 1840.	Cured.	Dec. 12, 1840.	103
42	Kent, James.	14	Abscess of knee-joint.	Thigh, Mr. Liston.	Sept. 9, 1840.	Cured.	Oct. 31, 1840.	52
43	Meedes, Thomas.	16	Inconvenient and ulcerated stump.	Leg, Mr. Liston.	Sept. 9, 1840.	Cured.	Nov. 3, 1840.	55
44	Dale, John.	27	Disease of ankle-joint.	Leg, Mr. Liston.	Sept. 9, 1840.	Cured.	Nov. 10, 1840.	62
45	Brown, Thomas.	22	Encephaloid tumour of hand.	Fore-arm, Mr. Liston.	Oct. 30, 1840.	Cured.	Dec. 9, 1840.	40
46	Turton, John.	63	Erysipelas of arm, &c. &c.	Upper-arm, Mr. Quain.	Oct. 30, 1840.	Cured.	Dec. 31, 1840.	62

FEMALE CASES.

No.	Name of Patient.	Age.	Nature of the Case.	Part amputated, and by whom.	Date of Operation.	Result.	Date of Discharge or Death.	No. of Days.
47	Arnold, Sarah.	75	Gangrena senilis.	Upper-arm, Mr. Liston.	Feb. 2, 1835.	Cured.	May 12, 1835.	100
48	Brooks, Mary Ann.	50	Osteo sarcoma of foot and ankle.	Leg, Mr. Liston.	Aug. 25, 1835.	Cured.	Oct. 10, 1835.	46
49	Parish, Catharine	6	Diseased knee-joint.	Thigh, Mr. Liston.	March 27, 1837.	Cured.	April 18, 1837.	22
50	Luck, Sarah.	35	Compound fracture of leg, March 27.	Thigh, secondary, Mr. Liston.	May 19, 1837.	Cured.	—	—
51	Hayman, Eleanor.	42	Disease of elbow following burn and injury.	Upper-arm, Mr. Liston.	Dec. 21, 1837.	Cured.	Jan. 9, 1838.	19
52	Harrison, Phillis.	21	Abscess and hectic following erysipelas.	Thigh, Mr. Liston.	Jan. 12, 1838.	Cured.	March 19, 1838.	66
53	Wood, Sarah.	16	Gangrene of arm following compound fracture.	Shoulder-joint, secondary, Mr. Liston.	March 14, 1838.	Cured.	June 15, 1838.	92
54	King, Ann.	6	Disease of elbow-joint.	Upper-arm, Mr. Liston.	July 9, 1838.	Cured.	Aug. 1, 1838.	23
55	Miller, Elizabeth.	9	Scrophulous disease of knee.	Thigh, Mr. Liston.	Oct. 3, 1838.	Cured.	Oct. 31, 1838.	27
56	Edmead, Sarah.	16	Strumous disease of tarsus and metatarsus.	Leg, Mr. Cooper.	Oct. 27, 1838.	Died.	Nov. 27, 1838.	31
57	Bevan, Margaret.	26	Tumour of tibia in ham.	Thigh, Mr. Liston.	Feb. 8, 1839.	Cured.	April 24, 1839.	75
58	Nash, Eliza.	5	Compound fracture of fore-arm and elbow-joint.	Upper-arm, primary, Mr. Liston.	June 27, 1839.	Cured.	July 20, 1839.	23
59	Kingston, Jane.	22	Disease of knee.	Thigh, Mr. Liston.	Oct. 22, 1839.	Cured.	Dec. 11, 1839.	50
60	Turner, Elizabeth.	16	Disease of knee.	Thigh, Mr. Liston.	Jan. 31, 1840.	Cured.	April 2, 1840.	61
61	Hatwell, Elizabeth.	23	Disease of knee.	Thigh, Mr. Liston.	Jan. 31, 1840.	Cured.	April 4, 1840.	63

No.	Name of Patient.	Age.	Nature of the Case.	Part amputated, and by whom.	Date of Operation.	Result.	Date of Discharge or Death.	No. of Days.
62	Thrift, Letitia.	18	Disease of knee.	Thigh, Mr. Liston.	April 6, 1840.	Died.	April 23, 1840.	17
63	Knight, Caroline.	21	Extensive necrosis of tibia.	Leg, Mr. Quain.	April 9, 1840.	Cured.	May 30, 1840.	51
64	McDonald, Mary.	20	Disease of knee-joint.	Thigh, Mr. Quain.	Aug. 5, 1840.	Cured.	Aug. 31, 1840.	26
65	Keating, Henrietta.	22	Disease of ankle-joint.	Leg, Mr. Liston.	Oct. 5, 1840.	Cured.	Oct. 30, 1840.	25
66	Halwell.	40	Compound fracture of leg, abscess.	Leg, secondary, Mr. Quain.	Nov. 12, 1840.	Cured.	Jan. 1, 1841.	44

COLICA PICTONUM

TREATED WITH

WARM WATER.

By JOHN WILSON, M.D.,

PHYSICIAN TO THE MIDDLESEX HOSPITAL.

READ MAY 11TH, 1841.

Constipation is a symptom always present in painters' colic, or colica saturnina, and in many instances it persists to such a degree as to require the most energetic purgatives to be employed in order to subdue it.

Along with these purgatives other modes of treatment have frequently at the same time been combined; and to such an extent have these remedies been complicated by some, that others have regarded such modes of treatment as empirical. With these the celebrated mode of treatment adopted at the Hospital of La Charité has been classed, yet it has been found so successful there, that authority, sanctioned by long experience, has prescribed this treatment to be adopted in all cases of *colique de plomb*.

On going round the wards of that hospital, I have heard the physicians remark, that in such a case

of colic they could have wished to have prescribed differently from what they had done, but that in such cases they were not at liberty so to do. This prescribed mode is too detailed to be given here, but it can easily be referred to. It consists of a variety of remedial agents, differently combined in the forms of emetics, purgatives, enemata, sudorifics, diluents, narcotics, and baths ; all of which are employed during the six or eight days the disease may continue.

After having myself been in the habit of using different remedies to promote the evacuation of the intestines, it occurred to me that if an enema were given during the time the patient was in a warm bath, it might then possibly be allowed to pass up the intestinal tube, and be retained so long as to accomplish the object of evacuating the intestines of their morbid secretion, and ultimately of restoring to them their healthy action ; accordingly I first made trial of this treatment in the following case.

May 15, 1838.—Matthew Proctor, age forty-five, for thirty years has been a plumber and painter ; ill five days, with severe pain coming on in fits over the abdomen, so as to bend him double ; has had no evacuation for five days past, though he has had mercury given, to which he attributes the present soreness of his mouth (but I have noticed in others suffering under a like attack of colic, tenderness of the gums, with a mercurial-like fœtor, where no mercury had been given) ; afterwards he had five

doses of castor oil; yesterday he had 3 grs. of opium in the morning and castor oil in the afternoon, when a mustard poultice was applied over the abdomen: still the bowels persist in the same state as they have been for the last five days. Now, abdomen very hard, but the severity of its pain is mitigated by pressure; tongue white; has had much sickness and frequent vomiting. This is his fourth attack of colic, but he has never had drooping of the wrists.

On admission he was put into a warm bath, and when he had been in it for some time, an elastic injecting tube was given him, with directions to employ it in trying to inject the water of the bath gradually up the intestines, and to persevere, should he feel no pain, nor unpleasant sensation, till he felt a sensation of fullness of the abdomen. In this he succeeded while he continued immersed in the bath; shortly after, and before he quitted the bath, he had an evacuation of lumpy fæces. After leaving it, he was purged four or five times, and relieved from the pain. The next day he had an ounce of castor oil, with ℥. xx. Tinct. Opii, and a sinapism to the abdomen. The third day the bath and enema while in the bath were repeated; after which, while he remained in the hospital, his bowels never required more than the mistura alba (sulph. mag. ʒss., carb. mag. gr. v., in mint water), two or three times a-day.

21st.—Free from pain; bowels regular; no complaint.

27th.—Quite well; has had no relapse since the first enema in the bath: discharged.

July 19th, 1838.—John Winter, age thirty-nine, painter. Ill a month,—began with shooting pains in the back, stomach and belly; weakness of the knees and ancles; sensation as if cold water was running down them, accompanied with a gnawing pain. No appetite for the last ten days. Has had pains in the abdomen occasionally, for a month past; while the pains lasted he could scarcely bear the abdomen to be touched with his hand, from its causing a painful and cold sensation. After these fits of pain had ceased he felt so drowsy, that he could fall asleep while standing; when the pain was the most excruciating, he says the belly was drawn inwards towards the back. Six days ago he began to vomit for the first time, but felt sickness before at times. For the last four days the bowels have been confined, and he has suffered from severe cramp-like pains in the thighs, knees, calves, and ankles, to the end of the toes. Has had colic four times, three of which he has been under my care. The last time he says his bowels had been confined for nine days; I then gave him small pills, and next day the bowels were opened. Three years ago when under my care, he says he was brought up in a chair, having then colic and paralysis of both arms and legs; got well of both before leaving the hospital.

This time, on admission, he was immediately put

into a warm bath, and while there the water of the bath was used as an enema, in a short time he felt as if he was going to have a motion in the bath. Ten minutes after he had been out of the bath, he had a copious dark motion, with immediate relief from pain of the abdomen and lower extremities. The same evening the bath and enema were again given; shortly after leaving the bath he had three copious evacuations, and felt still better. A sinapism was applied to the abdomen, but he did not sleep well in the night. The next day the bath and enema were repeated: shortly after quitting the bath, he had two motions. Then the tongue became clean, skin moist, and abdomen supple.

23rd.—Continues free from pain; had a motion yesterday, and another to-day, without either bath or injection.

26th.—No pain in abdomen, but some pain and redness of the ankles and joints of fingers on the right side since yesterday.

30th. No return of the colic; complains of weakness, particularly in the hands; also of pain in the forehead and left side of the face. Teeth loose, gums swollen and vascular, has a nasty bitter taste in the mouth.

August 6th.—Discharged.

From the 20th to 30th, he had the mistura alba only. From the 30th till he went out, he had from one to two drachms of the carbonate of iron thrice a-day; and gr. v. of compound aloetic pill at bedtime.

In this and the following cases the water of the bath was injected by the attendant. It was only Proctor who injected it himself.

Thomas Graves, painter, admitted 22nd October 1839, age thirty. Ill six months; began with sickness and vomiting; for the first three or four days the bowels did not act, when his hands and legs became affected by cramps. Has suffered from sickness and vomiting, also from burning sensation in the stomach, almost every day since. Now is unable to straighten the last three fingers of the right hand; left hand is weak; has full use of the lower extremities; never suffered from paralysis before, though he has had six or seven attacks of colic during the last six years. Bowels act by medicine.

The tendency to constipation here seemed only to be slight: but as the sickness continued frequent, and paralysis had commenced, also as he had now laboured so long under this, and had suffered so frequently before from other attacks of colic, a warm bath and enema were given, on supposition that there might be a retention of fecal matter in the intestines.

Had a copious lumpy evacuation in the bath, followed by others afterwards. Next day he felt greater relief than he had experienced for the last six months, and even longer, for he had previously not been entirely free from the effects of former attacks. A few days after, the appetite was better than it had been for six years past.

A fortnight after he complained again of sickness, which he now attributed to a blister that was applied to the wrist for the relief of the paralysis. He had two more baths and enemata, followed by copious evacuations both in and out of the bath.

December 4th.—Discharged.

William Laracey, painter, age forty, admitted 7th February 1840. Ill five days; began with pain over the lower part of the abdomen, followed by constipation and rejection of all ingesta. Now, slight weakness of the right wrist: has had colic several times before.

On admission, as the bowels had not acted for three or four days, he had a warm bath and enema, followed by a copious lumpy motion in the bath, and another in a quarter of an hour after he had left it; though he had no medicine, he had three more motions during the night. Strong fœtor of breath, like that caused by mercury, but to which it cannot be traced; gums red and shrunk—blue at the edges of the teeth, which are loose. Mouth worse now than on former attacks. Next day he had another bath, without enema.

10th.—Very much better: to have Olei ricini ℥ss. Tr. opii ♏. x.

12th.—Bowels have not acted for three days: to have the bath and injection; bowels were freely opened after he had been out of the bath a quarter of an hour, and twice more during the evening and following morning.

14th.—No pain; abdomen supple, wants sleep; breath continues bad, and teeth loose.

March 2nd.—Quite well; discharged.

Richard Rawlins, painter, age forty-five; admitted 13th August 1840. Ill a month; began with violent head-ache; sickness and vomiting at times, when the bowels were confined; only slight pain over the abdomen: has been a painter for eighteen years, but has never had colic before. Now complains of sickness, vomiting, and confined bowels; gums blue along the edges, breath fœtid. For three days, previous to yesterday, the bowels had not acted, when they were opened by medicine.

On admission, he had the warm bath and enema; after he had been an hour out of the bath the bowels acted; and once again next morning, but only slightly; then the bath and enema were repeated with effect.

17th.—Free from complaint; discharged.

Elizabeth Hughes, age sixty-three, admitted 19th May 1840. Ill six weeks; began with sickness, heart-burn, and frequent vomiting; afterwards the bowels were confined. She first became ill at the time her rooms were being painted. Now the vomiting continues, and the bowels have not acted for three days. On admission she had the bath and injection; while there passed a lumpy motion, and again, about half an hour after leaving the bath, she had a free evacuation, very dark, but not lumpy. After this she felt very comfortable, but had some griping pains in

the night. Next day she had Pil. saponis cum opio gr. v.; Olei ricini ʒss.

21st.—Haust. sennæ co.

22nd.—Bowels freely opened.

June 5th.—Discharged, well.

I have also at different times used the same treatment in other cases of constipation, not attributed to lead. I shall only state one of these, the last of such cases so treated.

Jane ——, aged thirty-five, admitted 21st Dec. 1840. Taken ill last night with violent pain in the ileo-cœcal region; pain also in the limbs and back; sickness, but no vomiting. Previously to this attack her bowels had been confined for a week, and have not yet acted. Subject to attacks of constipation since last June, when she suffered much from the effects of oxalic acid, and was under my care. On admission had a bath and injection, followed by a motion in the bath. After which the bowels were easily regulated by aperients.

Jan. 11th.—Discharged.

In concluding this paper, I may briefly notice that in all the preceding as well as other cases of constipation not here detailed, similar results have been obtained from the same treatment, and in no instance has there been a failure; so that others may possibly be induced to try this simple method of treatment. If after their own experience of it, they should feel satisfied with its results, it will be for them to decide how far it may be extended to the prompt relief of sufferings, which, however severe,

are only trifling and transient in comparison to the paralysis which this disease, when neglected, or imperfectly cured at the commencement, so frequently entails on those whose subsistence depends on their manual exertions.

MALPOSITION OF THE KIDNEYS;

ABSENCE OF THE VAGINA, UTERUS, AND FALLOPIAN TUBES;

DISEASE OF LEFT OVARY.

By R. BOYD, M.D.,

RESIDENT PHYSICIAN TO ST. MARYLEBONE INFIRMARY, AND LECTURER ON MEDICINE.

Communicated by JOHN G. PERRY, Esq.

READ MAY 11TH, 1841.

Sarah Richardson, æt. seventy-two, died under my care in the St. Marylebone workhouse, of chronic disease of the brain and lungs. The body was examined on the 6th March last, twenty-four hours after death. From the following peculiarities which presented themselves in the genito-urinary organs, it occurred to me to submit the case, with the preparation of the parts, to the notice of the Fellows of this Society.

The renal capsules were in their usual position, on either side the spine, immediately below the diaphragm. Right kidney situated in the right iliac fossa, below the cæcum, partially concealed by the right ovary, which had a slight peritoneal attachment to it. The renal artery was given off from the right iliac, close to the aorta.

Left kidney in the pelvis below the psoas muscle, resting on the sacrum and origin of the pyriform muscle. An artery which arose from the aorta at its bifurcation, in the situation of the middle sacral, entered the upper end of the kidney; another larger branch from the internal iliac artery, entered the kidney in the usual situation.

Kidneys, ureters, and bladder, in a healthy condition. Right ovary, when divided, presented the natural structure; to its upper or free extremity was attached, by a thin neck, a small oval sac. A round ligament connected the ovary to, and was lost in, the cellular tissue behind the neck of the bladder.

The situation of the left ovary was occupied by a fibrous tumour of an irregular globular shape, connected by a round ligament smaller than that on the right side, but which took a similar course to the bladder.

The Fallopian tubes were not present. There was a slight projection of the peritoneum, behind the bladder, from cellular tissue beneath it. A careful examination of the parts in their recent state was made by Dr. R. Lee, also by Mr. Kiernan, afterwards by Mr. Perry,—no vestige of uterus could be discovered.

The external parts of generation presented no unusual appearance; the mons Veneris but thinly covered with hair: a *cul de sac*, about half an inch deep, beneath the orifice of the urethra, is all that exists of vagina.

Mammæ were well developed for so old a person.

The disconnection, in this instance, between the renal capsules and the kidneys, seems to favour Mr. Gulliver's views as to the functions of the former organs. From Mr. Gulliver's observations it would appear, that the renal capsules secrete a peculiar matter, which may be found in the veins, from which it follows, that these organs are glands, to which the veins serve as ducts. The renal capsules therefore are probably quite unconnected in function with the secretory glands, as the kidneys.

As regards the previous history of this woman, the only information obtained was, that she had been married, but did not live on amicable terms with her husband.

It will be remembered, that in the memorable case of the unfortunate Hannah Brown, murdered by Greenacre, the absence of the uterus was, as in this case, observed: it may therefore be useful to record, from time to time, such other instances of this curious malformation as may present themselves to practitioners.

PATHOLOGICAL AND SURGICAL OBSERVATIONS

ON THE

DISEASES OF THE EAR.

By JOSEPH TOYNBEE, Esq.,

MEMBER OF THE ROYAL COLLEGE OF SURGEONS, LONDON; AND LATE ASSISTANT TO THE CONSERVATORS OF THE MUSEUM OF THAT INSTITUTION.

Communicated by RICHARD BRIGHT, M.D.

READ JUNE 22ND, 1841.

Introduction.

I propose to lay before this Society a series of papers, having for their object the elucidation of the Nature and Treatment of the Diseases of the Ear. In introducing my first communication upon this branch of surgery, I am bound to confess that the investigation of it is attended with more difficulties than are met with, I think, in the study of any other class of diseases. Those difficulties, however, which formerly appeared to be most formidable, have been much diminished by the exercise of careful and patient attention, and I feel assured that the continued study of this branch of surgery, will be productive of still more satisfactory results.

If a more accurate acquaintance with the true nature of the diseases of the ear should not immediately lead to the discovery of new curative means, it must assuredly indicate plans for the prevention of deafness; it will point out the course to be adopted in order to arrest its progress, and it will guide us in the adoption of a rational and scientific method of treatment.

With respect to my own labours in this department of surgery, were it only for the many phenomena worthy of consideration which they have made me acquainted with, I should be determined not to relinquish them; but the cheering confidence that they will be productive of practical benefit, encourages me to pursue them with perseverance and ardour.

I intend, at first, to confine myself to investigations into the pathology of the organ of hearing, as I am convinced, that without a knowledge of this, it will be impossible to arrive at any rational and useful plan of treatment for its diseases.

1. *Of the cavity of the tympanum.*

From the opportunities I have had during the late few years of examining with care the cases of persons afflicted with deafness, I have been led to believe that this disease must very frequently depend upon a morbid condition of the fibro-mucous membrane lining the cavity of the tympanum. I have arrived at this conclusion from studying the history of the cases that came under my observa-

tion, and from a careful examination of the condition of the ear by aid of the speculum auris, &c., and I have been confirmed in this opinion, by the results of the curative treatment which I have adopted. In order to throw some light upon this subject, I determined to examine the condition of the tympanic cavity in all the ears that I could obtain.

I was incited to this resolution by the perusal of the observations on the Diseases of the Nerves of the Senses, by Mr. Swan, contained in his valuable "Treatise on Diseases and Injuries of the Nerves."* Mr. Swan relates the particulars of three dissections† in which the mucous membrane of the cavity of the tympanum was diseased and thickened, so that the nervous plexus of Jacobson could not be distinguished. One of these cases occurred in an old woman, the second in a man, and the third in a very young woman. In the second case there was also some roughness of the bone.‡ After detailing these appearances Mr. Swan writes,§ "I believe deafness does not so often depend on a disease of the auditory nerve as has been supposed, but much more frequently on an inflammatory action attacking the membrane lining the tympanum, and involving the small branches of the tympanine nerves." He adds, "although

* New edition, very considerably enlarged, 1834.

† Page 270.

‡ I am indebted to Mr. Swan for a specimen of this kind.

§ Page 271.

many of the noises may depend on the disordered functions of the auditory nerve, I think they may arise too from these small branches of the glosso-pharyngeal and their communication with the sympathetic in the carotic canal."

The following observations by the same author appear to me to be of the greatest interest. "The consideration of the distribution of the tympanine branch of the glosso-pharyngeal nerve, leads to the conclusion that the tympanum performs more important functions in the production of hearing than have been usually ascribed to it, and that the failure of remedies in cases of deafness which have been termed nervous, may have proceeded very much, not only from the obscure situation of the tympanum, but from the misapplication of the remedies themselves. And I conceive, therefore, as a thickening of the membrane lining the tympanum and involving such delicate nerves, can be so often observed, that many diseases of the ear may be more within the reach of art than has been contemplated, and that by subduing the inflammatory action at its very onset, before the structure of the delicate parts has become so much changed as permanently to impair their functions, many of the worst cases might be prevented."*

I now proceed to detail at length the account of the dissections of forty-one ears; which were all taken, with one exception, from patients who died

* Loc. cit. pp. 272, 273.

in hospitals and infirmaries of various diseases; and as a general rule they came into my possession, unaccompanied by any particulars respecting the patients during life.

DISSECTIONS.

Nos. I. and II. From an adult.

The right ear.—The external meatus is in a healthy state.

The membrane of the tympanum is very delicate, and quite transparent, so that the handle of the malleus is distinctly seen through it.

The cavity of the tympanum contains but a very small quantity of mucus, which is spread over the surface of the investing fibro-mucous membrane. The latter membrane is so extremely thin and transparent, that its presence upon the surface of the osseous walls of the tympanum cannot be detected without the use of a magnifying glass, and by the aid of the touch. The nervous filaments upon the surface of the promontory are most distinctly seen; the margin of the fenestra rotunda is distinct and defined, and the membrane which closes it is thin and transparent. The ossicula at first sight do not appear to be covered by any membrane. The crura of the stapes and their point of attachment to its base are seen distinctly, and between the inferior surface of these crura and the promontory is seen a distinct fissure.

The left ear presents the same appearances as the right.

No. III. From a man æt. 45.

The right ear.—The meatus externus is healthy.

The membrana tympani is thin and transparent.

The cavity of the tympanum is in a healthy condition; the mucous membrane which invests it is thin and nearly transparent, so that the tympanic plexus of nerves is easily distinguished. This membrane forms an investment to the stapes, which prevents its crura from being distinctly seen.

No. IV. From an adult.

The right ear.—The meatus externus and the membrana tympani are healthy. The mucous membrane of the cavity of the tympanum is nearly transparent.

No. V. From an adult.

The left ear.—The meatus externus, the membrana tympani, and the cavity of the tympanum, are in a healthy condition.

No. VI. From an adult.

Right ear.—The meatus externus, the membrana tympani, and the cavity of the tympanum, are in a healthy condition.

No. VII. From a child.

The same as No. VI. The mucous membrane of the tympanic cavity is quite transparent.

Nos. VIII. and IX. From an adult.

The right ear is quite healthy, and similar to Nos. I. and II.

The left ear is also in a healthy state. The membrane of the cavity of the tympanum is so thin, that the crura and base of the stapes, and the cir-

cumference of the fenestra ovalis, are distinctly seen.

Nos. X. and XI. From a child of eight or nine years of age.

Right ear.—The meatus externus is in a healthy state.

The membrana tympani.—Excepting a small transparent portion of about a line in diameter, situated at the point of attachment of the long process of the malleus, this structure is like white paper.

The cavity of the tympanum is nearly filled by a viscid mucus of a dark brown colour, which also occupies the cavity of the mastoid cells. Upon examination with the microscope, this fluid presents numerous elongated epithelial cells, several of which are in marginal apposition, also corpuscles similar to those of the blood, and others of a darker colour, and larger, which are apparently composed of granules, and contain a nucleus and nucleolus. The Eustachian tube contains a large quantity of this mucous fluid. In the midst of this fluid are smaller masses of a whitish calcareous substance, possessing considerable hardness; these are held together by means of concreted mucus. The membrane lining the cavity of the tympanum, the mastoidal cells and the Eustachian tube is thicker than natural, opaque and white. The ossicula auditus receive a thick investment from it, and the base of the stapes is quite concealed by it. The tympanic plexus of nerves is not discernible through this thickened membrane.

The left ear.—The meatus externus contains a quantity of coagulated fluid which is in contact with the membrana tympani.

The membrana tympani.—The cavity of the tympanum and the Eustachian tube are in a similar state to those of the right ear.

No. XII. From an adult.

The membrana tympani is healthy.

The mucous membrane of the tympanic cavity is somewhat opaque.

No. XIII. From an adult.

The membrana tympani is healthy.

The mucous membrane of the tympanic cavity is thin and transparent, excepting where it covers the stapes, which it nearly conceals, being opaque and flocculent.

No. XIV. From an adult.

The membrana tympani is thin and transparent.

The cavity of the tympanum.—Its investing membrane is thicker than natural, entirely concealing the stapes; and membranous bands connect the long process of the incus to the wall of the tympanum. The opacity of the investing membrane of the tympanum prevents the nervous plexus from being discerned.

No. XV. From an adult.

The membrana tympani is rather opaque.

The mucous membrane of the tympanic cavity is thin and transparent; the circumference of the fenestra ovalis, the crura of the stapes and its base are distinctly seen; fine membranous bands pass from

the anterior crus of the stapes to the wall of the tympanum.

No. XVI. From an adult.

The left ear.—The meatus externus contains a considerable quantity of cerumen mixed with epithelium.

The membrana tympani is not quite so transparent as natural.

The cavity of the tympanum.—The mucous membrane is somewhat opaque, and a membranous band connects the neck of the stapes to the membrana tympani.

Nos. XVII. and XVIII. From a child.

In both ears the meatus externus and the membrana tympani are healthy.

The mucous membrane of both tympanic cavities is thin and transparent, and the lower margin of the fenestra ovalis is distinctly seen ; there are delicate bands connecting the upper surface of the crura of the stapes to the surrounding mucous membrane.

No. XIX. From a man æt. twenty-seven, who died of consumption, with a disease of the bone of the right ear.

The left ear.—The membrana tympani has been removed.

The cavity of the tympanum.—Its investing membrane is thin and very delicate : a delicate, firm membranous thread connects the upper surface of the posterior crus of the stapes with the superior wall of the tympanic cavity. The stapes however seems to possess its natural mobility.

Nos. XX. and XXI. From a child.

The right ear.—The meatus externus is healthy.

The membrana tympani is transparent, and in a healthy condition, with the exception of a narrow opaque band at its circumference.

The cavity of the tympanum contains a small quantity of transparent mucus; its lining membrane is rather opaque; the larger nerves can however be distinguished through it. The ossicula are smooth, so that they do not appear to have any membranous investment; membranous bands pass from the upper surface of the posterior crus of the stapes, and from the upper and lower surfaces of its anterior crus, and connect this bone to the adjoining mucous membrane.

The left ear is in a healthy condition, excepting the presence of some membranous bands, which pass from the surface of the ossicula auditus to the surrounding mucous membrane.

Nos. XXII. and XXIII. From an adult.

The right ear.—The meatus externus and the membrana tympani are in a healthy condition.

The cavity of the tympanum.—The mucous membrane is thin and transparent; there are no adhesions in any part of it, and the stapes appears to be more easily moved than in the specimens in which it is almost concealed by the thick mucous membrane.

The left ear.—The meatus externus and the membrana tympani are healthy.

The cavity of the tympanum.—The mucous membrane is rather thicker than natural, and is somewhat

opaque. Delicate bands connect the posterior part of the long process of the incus to the mastoidal cells, and the upper surface of the stapes to the superior wall of the tympanic cavity.

Nos. XXIV. and XXV. From an adult.

The right ear.—The meatus externus contains a mass of cerumen in contact with the membrana tympani, which is somewhat opaque.

The cavity of the tympanum.—Its investing membrane is slightly opaque, and there are membranous bands between the crura of the stapes and the adjoining walls of the tympanum.

The left ear is in the same state as the right.

No. XXVI. From an adult.

The right ear.—The meatus externus and the membrana tympani are healthy.

The cavity of the tympanum.—The fibro-mucous membrane is slightly more opaque than natural, and bands connect the crura of the stapes to the circumference of the cavity of the tympanum.

No. XXVII. From an adult.

The right ear.—The meatus externus and the membrana tympani are in a healthy condition: in the floor of the former, near to the membrana tympani, a rye seed is lodged.

The cavity of the tympanum.—Its mucous membrane is somewhat opaque, and is covered by a considerable stratum of mucus, a quantity of which blocks up the Eustachian tube. Delicate membranous bands connect the crura of the stapes to the walls of the tympanum.

Nos. XXVIII. and XXIX. From a man, æt. 36, who died of consumption.

The right ear.—A quantity of ceruminous secretion fills the whole of the meatus externus.

The membrana tympani is healthy.

The Eustachian tube, at its guttural extremity, contains a quantity of viscid mucus.

The cavity of the tympanum is lined by a thin layer of mucus. Its investing membrane is rather thicker than natural; the crura of the stapes are, however, seen very distinctly. Extending from the long process of the malleus directly inwards to the mucous membrane covering the promontory, is a flat and transparent band of considerable strength.

The left ear.—The mucous membrane of the tympanic cavity is slightly thicker than natural.

No. XXX. From an adult.

The right ear.—The meatus externus and the membrana tympani are in a healthy state.

The cavity of the tympanum is covered by a small quantity of mucus; its investing membrane is somewhat thicker than natural, and rather opaque, so that the principal trunks only of the tympanic nerves are discernible: delicate bands connect the upper surface of the crura of the stapes to the surrounding mucous membrane, and its inferior surface is scarcely discernible on account of the thickened condition of the membrane which covers it.

Nos. XXXI. and XXXII. From an adult.

The right ear.—The external meatus is healthy;

the membrana tympani is also healthy, being thin and transparent in every part.

The cavity of the tympanum.—Its investing membrane is very slightly more opaque than natural. A firm band connects the long process of the incus with the inner surface of the membrana tympani, and there are also five membranous bands which connect the posterior crus of the stapes to the adjoining surface of the tympanic cavity.

The left ear.—The meatus externus, and the membrana tympani, are healthy.

The cavity of the tympanum contains a small quantity of viscid mucus; its lining membrane is slightly thicker than natural, and delicate bands pass from the upper surface of the crura of the stapes to the adjacent parietes of the tympanum.

The Eustachian tube is filled with thick and viscid mucus, and its mucous membrane is slightly rough.

No. XXXIII. From a young man.

The left ear.—The meatus externus contains a collection of cerumen mixed with epithelium.

The membrana tympani is thicker than natural, and is of a brownish colour.

The cavity of the tympanum contains a considerable quantity of a thick opaque fluid, which is seen by the aid of the microscope to be composed of pus-corpuscles, among which oil globules float. The mucous membrane is white, pulpy, and thick; membranous bands connect the inner surface of the membrana tympani to the malleus. The mucous

membrane of the Eustachian tube is thicker than natural; at its tympanic extremity it contains the purulent fluid above noticed. At about three-quarters of an inch from the point where it opens into the cavity of the tympanum, bands are seen to pass from the opposite parts of its circumference, which are of considerable strength, but do not completely close the canal.

Nos. XXXIV. and XXXV. From an adult, who died of delirium tremens, and who was not known to be deaf by his attendants.

The right ear.—The meatus externus is covered with a thick discharge, of a leaden hue, and having a fœtid odour.

The membrana tympani has been entirely destroyed, excepting a very small portion at the upper part of the meatus, to which the processus brevis mallei is attached.

The cavity of the tympanum.—Its mucous membrane is white, thick, and soft; it is covered by a purulent discharge, but without any adhesion.

The left ear.—The meatus externus and the membrana tympani appear perfectly healthy.

The cavity of the tympanum.—Its investing membrane is somewhat more thick and opaque than is natural, and numerous membranous bands are seen to pass from the upper surface of the crura of the stapes to the adjoining wall of the tympanum.

Nos. XXXVI. and XXXVII. From a man, æt. 50.

The right ear.—The meatus externus and the membrana tympani had been accidentally removed.

The cavity of the tympanum.—The lining membrane is thick, and of a dull white hue, and it is soft and velvety to the touch. The nervous plexus on the promontory cannot be distinguished through it. The portion of it which is inflected into the mastoid cells is very distinct, and can be removed from the bone with facility. Where this membrane is reflected over the stapes, it is so thickened, that only the cervix of this bone can be discerned, and from that portion which covers the upper surface of it, several delicate bands are seen to pass to, and to connect it with, the surrounding mucous membrane. The inferior surface of the crura is not visible, as the membrane here passes from the promontory directly to the neck of the bone, and thus fills up the fissure which, in the healthy state, exists between the stapes and the promontory, and the presence of which has been indicated in various dissections, especially in No. I. This membrane can be removed from the surface of the promontory in a distinct layer; it does not adhere to the bone very firmly. The fenestra rotunda is covered by this thick membrane, so that, instead of its having the appearance of a defined foramen, it presents that of a simple depression in the mucous membrane.

The left ear.—The meatus has been removed.

The membrana tympani.—The lower part only of this membrane remains. At its circumference, it is

white, like paper, and, upon a careful examination, this opacity is seen to arise from a thickened state of the mucous membrane of the tympanic cavity, which forms an internal layer to the "membrana tympani propria."

The cavity of the tympanum.—As in the right ear, the investing membrane is of a dull white colour, and that part of it which is reflected over the crura of the stapes is connected to the surrounding membrane by numerous membranous bands.

Nos. XXXVIII. and XXXIX. From a child who died with a fracture of the cranium.

The right ear.—The external meatus contains a quantity of yellow cerumen, mixed with flakes of epithelium.

The membrana tympani is opaque towards its circumference, and its central portion is of a darkish brown colour.* The opacity of the circumference appears to depend upon a thickening of its internal fibro-mucous lamina. From the external surface of the membrana tympani, and immediately at the point of attachment of the extremity of the long process of the malleus, is a soft, white, polypoid excrescence, of which the pedicle is about half a line in length; it is flat and narrow, its expanded portion measuring about a line and a half in circumference; and it is very firmly attached to the membrana tympani.

* This colour was afterwards found to depend upon the presence of blood in the cavity of the tympanum.

The cavity of the tympanum contains a quantity of mucus mixed with blood, the presence of which was discerned through the membrana tympani. The mucous membrane of this cavity is thick and white: membranous bands, and some of very considerable size, pass from the walls of the mastoidal cells, and surround the head of the malleus and the body of the incus; two other adhesions connect the upper and lower borders of the anterior crus of the stapes to the adjoining parietes of the tympanum; and a third band connects the external surface of the long process of the incus, near to its inferior extremity, to the membrana tympani, immediately above and below the point where the surface of the latter is traversed by the chorda tympani nerve. Among the thick mucus contained in this cavity are small rounded yellow masses of a caseous consistence; which, upon examination with the microscope, were observed to consist of minute granules.

The left ear.—The external meatus is full of cerumen and epithelium.

The membrana tympani is transparent at the posterior part of its circumference, but more centrally it appears of a brown colour, which was found to depend upon the presence of a dark fluid in the tympanic cavity.

The tympanic cavity contains a large quantity of thick dark-coloured mucus, among which are portions of the yellow matter noticed in the above dissection. This mucus at the tympanic portion of the

Eustachian tube is of nearly a solid consistence, and completely closes the orifice. The investing membrane of this cavity is thick and white.

Nos. XL. and XLI. From Mr. M. a deaf patient.

The right ear.—The meatus externus is white, and deprived of cerumen. The membrana tympani is transparent, thin and healthy.

The cavity of the tympanum.—Its investing membrane is thin, and appears to be healthy. But a remarkable pathological condition is presented in the firm anchylosis of the base of the stapes to the margin of the fenestra ovalis. This appears to be produced by an expansion of the base of the stapes, which projects into the cavity of the vestibule, so as to form within it an oval protuberance, which is smooth, and of an opaque white, and firmly adherent to the vestibular parietes. This anchylosis appears to depend upon a disease of the stapes, the walls of the vestibule being perfectly healthy. They may be distinguished from each other by the difference in their colour. In this specimen, the crura of the stapes are disconnected from the base; I am unable to say whether this resulted from the process of absorption during life, or was produced by a mechanical lesion, previous or subsequent to death. The membrane of the fenestra rotunda appears in a natural state.

The right ear.—The meatus externus is dry, and deprived of cerumen.

The membrana tympani is thin and transparent.

The cavity of the tympanum.—The fibro-mucous

membrane is healthy; the nervous plexus is most distinctly seen, and there are no membranous bands between any part of it. The stapes is entire, and is completely and firmly anchylosed to the circumference of the fenestra ovalis.*

The following is a concise view of the state of the cavity of the tympanum in the 41 dissections of which the particulars have been detailed at length above.

1	In a healthy state	10
2	With simple thickening of the investing membrane	6
3	With membranous bands proceeding from various parts of the cavity of the tympanum, most frequently connecting the stapes to the circumference of that cavity	4
4	With slight thickening of the investing membrane, accompanied by the existence of membranous connecting bands . .	13
5	With considerable thickening of the investing membrane and with membranous bands	5
6	With suppuration of the cavity of the tympanum	1
7	With anchylosis of the base of the stapes to the circumference of the fenestra ovalis .	2
		41

* I defer to a future opportunity the particulars of the case of the patient from whom the specimens were taken.

Upon these dissections, I shall at the present time offer only a few words of observation.

It must appear remarkable that, in thirty-nine specimens of the organ of hearing, taken promiscuously, there should be so large a majority which present appearances indicative of disease. I must observe however, that in several dissections, and more particularly those in which there exist delicate membranous bands, connecting together various portions of the mucous membrane, without the latter being thickened, the deviation from the healthy state is so very slight, that it may be presumed there was not any accompanying derangement of the functions of the organ. The large proportion of specimens which are undoubtedly in a diseased state is very surprising, but it may be less so perhaps when I state that many persons whom I have examined, and who have considered that they *hear perfectly well*, cannot distinguish the ticking of my watch at a distance of two feet and a half, and in some cases, of four or five inches only; though the same watch can be heard distinctly by a healthy ear seven or eight feet from the head. I am thus induced to believe that the function of the ear is impaired much more frequently than is generally supposed; but that such impaired function is not detected without special inquiry. It would be interesting to know whether such derangements are dependent upon the peculiar conditions of the investing membrane of the tympanic cavity, which I have had occasion so frequently to notice in my relation of the above dissections.

In conclusion, I trust that this communication will be regarded only as the commencement of my researches into the pathological conditions of the cavity of the tympanum, and I hope that the appearance of incompleteness by which it is characterized will be overlooked, when it is remembered that the path which I am pursuing has hitherto been untrodden, and that many difficulties which beset it have still to be removed.

I beg to state, that all the preparations from which the above descriptions were written are in my possession ; and that I shall have great pleasure in showing them to any members of the profession, to whom, I take this opportunity of stating, I shall feel deeply indebted for any opportunities that they may kindly afford me, of dissecting the organ of hearing, especially when it is diseased.

12, Argyll Place, April 1841.

Note.—Since the above Paper was read, my attention has been directed to a paper published in the 110th volume of the Philosophical Transactions, entitled, " On Sounds inaudible by certain Ears, by William Hyde Wollaston, M.D., F.R.S." The object of the author is to show that there is a very distinct and striking difference between the powers of hearing of different individuals. I am inclined to believe that the deficiency of the power depends upon

some pathological condition of the ear, perhaps of a nature similar to that which I have pointed out. Dr. Wollaston states that it never occurred to him to find this defect in any person under twenty years of age—a fact which favours the opinion of its being dependent upon disease or derangement of the organ.

TWO CASES

OF

DISLOCATION OF THE TENDON

OF THE

LONG HEAD OF THE BICEPS HUMERI FROM ITS GROOVE.

By JOHN SODEN, Jun., Esq.,
SURGEON, BATH.

Communicated by RICHARD PARTRIDGE, Esq.

READ JULY 6TH, 1841.

Joseph Cooper, ætat. 59, was admitted into the Bath United Hospital, November 9, 1839, on account of a compound fracture of the skull, received through a fall down a trap-door, from the effects of which he died in a few hours. His death afforded an opportunity for examining an old injury of the right shoulder, the symptoms of which had always been involved in great obscurity, and which occurred in the following manner.

In the month of May 1839, the deceased was engaged in nailing down a carpet, when, on rising hastily from his occupation, his feet slipped, and he fell backwards on the floor; in order to break the force of his fall, he involuntarily placed his arm behind him, and, by so doing, received the whole

weight of his body upon the right elbow; that joint, however, though the only part struck, received no injury, for the shock was instantly transmitted to the shoulder, and there the whole effects of the accident were sustained.

Acute pain was immediately experienced, and the man supposed that he had suffered either a fracture or dislocation, but, finding that he could raise the arm over his head, he felt reassured, and endeavoured to resume his work. The pain, however, compelled him to desist, and he went home.

When I saw him on the following morning, the joint was greatly swollen, tender to the touch, and painful on very slight motion; there was then no possibility of his placing his arm over his head, as he said he had done immediately after the accident. I satisfied myself that there was neither fracture nor dislocation of the bones, and not suspecting the existence of a more specific injury than a "severe sprain," I set down the case as such, and avoided the unnecessary pain of further examination. Unusually active means were required to subdue the inflammation, and, at the end of three weeks, though the swelling was much reduced, the tenderness in front of the joint, and pain on certain movements of the limb, were scarcely less than on the day after the occurrence of the accident.

On comparing the joint with its fellow, now that the swelling had subsided, a marked difference was observable between their respective outlines; the injured shoulder was evidently out of drawing, but

without presenting any glaring deformity. When the man stood erect, with his arms dependent, the distinction was very manifest, but difficult to define: there was a slight flattening on the outer and posterior parts of the joint, and the head of the bone looked as though it were drawn up higher in the glenoid cavity than it should be. Examination verified this appearance in two ways: 1st, on moving the limb, with one hand placed upon the shoulder, a crepitating sensation was experienced under the fingers, simulating a fracture, but, in reality, caused by the friction of the head of the humerus against the under surface of the acromion; 2ndly, on attempting abduction, you found that the arm could not be raised beyond a very acute angle with the body, from the upper edge of the greater tubercle coming in contact with that of the acromion, and thus forming an obstacle to all further progress. The head of the bone was also unduly prominent in front, almost to the amount of a partial dislocation.

For all useful purposes the arm was powerless—the man was unable to raise the smallest weights from the ground, on account of the severe pain induced by any exercise of the biceps muscle; otherwise, the underhand motions were not limited, the arm could be readily swung backwards and forwards, and the patient could grasp an object firmly, and without pain, so long as he made no attempt to raise it. The locking of the humerus and acromion on abduction, in the manner before alluded to, of

course formed an insuperable opposition to all the overhand motions.

The pain caused by the action of the biceps was described as very acute, and extending through the whole course of the muscle, but felt chiefly at its extremities, the lower equally with the upper; when not excited by muscular action, it was referred to the front of the joint, and confined to the space between the coracoid process and the head of the humerus, which spot was marked by extreme tenderness and some puffy swelling.

The patient being of a rheumatic habit, inflammatory action of that character was soon established in the joints, so that the peculiar symptoms of the injury were masked by those of general articular inflammation, which added greatly to the man's sufferings, and materially augmented the difficulty of the diagnosis. It is unnecessary to dwell upon the treatment, and I shall only mention that the patient found most relief from the elbow being well supported, and placed close to the side, with pressure by a soft pad firmly applied against the deltoid muscle. This plan of perfect rest was persevered in for some time, under the impression that the glenoid cavity was the seat of injury, and that probably its upper portion, including the origin of the biceps tendon, was detached.

On examining the joints, the accident was found to be a dislocation of the long head of the biceps from its groove, unaccompanied by any other injury. The tendon was entire, and lying enclosed in its

sheath on the lesser tubercle of the humerus; the capsule was but slightly ruptured; the joints exhibited extensive traces of inflammation; the synovial membrane was vascular and coated with lymph; recent adhesions were stretched between different parts of its surface, and ulceration had commenced on the cartilage covering the humerus, where it came in contact with the under surface of the acromion; the capsule was thickened and adherent, and in time probably anchylosis of the joint would have taken place.

Rupture of the tendon of the biceps would appear to be no uncommon accident; for its occurrence, both separately, and in combination with dislocation of the bone, has been several times noticed. Mr. Stanley has written an article on the subject in the 3rd volume of the Medical Gazette. In the 14th volume of the same journal there is also a valuable paper by Mr. Gregory Smith, in which are detailed "the pathological appearances in seven cases of injury of the shoulder." The specimens were accidentally met with in the dissecting room. The same altered position of the bones, as in the present case, was noticed in some of them, and in all the tendon was in some way injured; in five it had been ruptured, and in the remaining two it was displaced from its groove.

In the Encyclopédie Methodique, an instance is quoted from Mauget, where the tendon was dislocated, and, as far as I can discover, the symptoms of the accident are nowhere else recorded; the case,

however, differs materially from the one I have related, in that the tendon was probably dislodged to the outer side of the groove, for the elbow was immoveably bent.

If the altered position of the bone be dependent on the displacement of the tendon, (and of this there can be no doubt from the injury being uncomplicated,) the biceps muscle must exercise a more extended influence than is usually attributed to it; and I think a consideration of the structure of the parts, independently of the evidence afforded by this case, will show that the long head is designed, not merely to act as a ligament, but also to serve as a capsular muscle.

The head of the humerus is said to owe the security of its position rather to the combined actions of the capsular muscles than to the ligamentous attachments of the humerus to the scapula; and the tendon is vaguely described as strengthening the joint, and in that respect as bearing an analogy to the ligamentum teres of the femur. The capsular muscles may be considered as having their origins from the upper three-fourths of the circumference of a circle; they then converge towards its centre, represented by the head of the humerus into the upper, anterior and posterior parts of which they are inserted. In the lower segment of this circle there is a gap (the axilla) not occupied by muscles. As the head of the bone rolls on an almost flat surface, its position is entirely under the controul of the capsular muscles; it

follows, therefore, that to enable the bone to maintain its equilibrium, these muscles should exactly antagonize each other; or, like the face in paralysis of the portio dura, the heads of the humerus would be drawn to the side of the preponderating muscle. The necessity of a muscle from the ribs to the humerus, to counteract upper capsular muscles, is probably superseded by the singular course of the long head of the biceps.

With this consideration of the tendon of the biceps in its capacity of a capsular muscle, we can understand why, when the tendon is ruptured or displaced, the head of the bone should rise upwards and forwards,—a precisely opposite direction to that in which the tendon would, when *in situ*, tend to direct it.

From the close resemblance of this case to a partial luxation of the humerus, one is led to inquire how far a lesion of the tendon is involved in the production of this accident. I have had no opportunity of investigating this point, and I can only find three dissections of joints in a state of partial dislocation, on record. Mr. Hargrave has published an account of one in the Edinburgh Medical and Surgical Journal, in which he also quotes the others—one from Sir Astley Cooper's large work, and the other from Dupuytren's Leçons Orales. They were all cases of long standing. In Mr. Hargrave's case, the tendon was ruptured, but that gentleman does not attach any importance to the circumstance. In Sir Astley Cooper's, it had

been ruptured, but had subsequently become reunited; and in Dupuytren's, its condition is not alluded to; indeed, his whole account is incomplete.

Mr. Partridge of King's College made some experiments to ascertain to what extent, and by what means, partial dislocation could be artificially produced; he found, though the capsule was completely divided, that so long as the tendon was undisturbed, no displacement of the bone could be effected; and that division of the tendon alone was insufficient; but when the incision through the tendon included a small portion of the capsule, all impediment to the dislocation was removed.

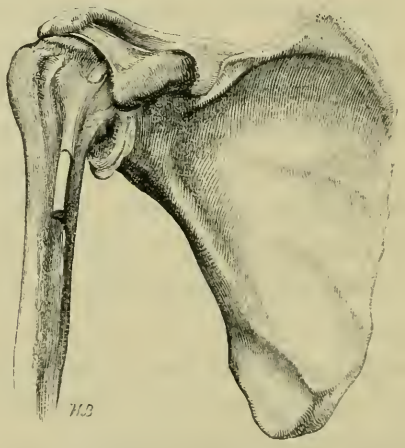
Case of displacement of the tendon in combination with dislocation forwards of the humerus.—William Mountford, ætat. 55, was admitted into the Bath United Hospital, on the 24th of April last, having been severely injured by a quantity of earth falling upon him. He had sustained in addition to some severe contusions, a dislocation forwards of the humerus, and fractures of some of the ribs on the same side. The man lingered for a few days, and died from hæmorrhage into the cavity of the chest, in consequence of the lung having been perforated by a fractured rib.

Unusual difficulty had been experienced in the reduction of the dislocation, which was very high up, but it had been at last effected.

On examining the joint, a rent was discovered in the capsule on its inner side, through which the

head of the bone had passed; the sheath was torn up, and the tendon having escaped, had slipped completely over the heads of the bone, and was lying at the inner and posterior part of the joint.

I consider that the difficulty of reduction was attributable to the complication of the injury of the biceps, for the inferences from the former case would lead us to expect that, had the tendon been *in situ*, it would have aided the return of the bone; but its influence being removed, the resistance of the upper capsular muscles became doubled, and twice the amount of force was consequently required to overcome it. This may be considered as a rule applicable to all dislocations forwards, where the head of the bone is not thrown *below* its original level.



Front view of the preparation in King's College Museum, shewing the displacement of the biceps tendon from its groove, and the head of the humerus drawn upwards and forwards in contact with the acromion and coraco-acromial ligament.

AN ACCOUNT

OF

TWO CASES OF ANEURISM

OF THE

SUPERIOR MESENTERIC ARTERY,

IN ONE OF WHICH JAUNDICE WAS INDUCED BY PRESSURE OF THE SAC.

By JAMES ARTHUR WILSON, M.D.,
PHYSICIAN TO ST. GEORGE'S HOSPITAL.

READ JULY 6TH, 1841.

I PROPOSE to bring under the notice of the Society a case of Jaundice, which terminated fatally, and which was found after death to have depended on a variety of organic disease, not usually recognised as one of the causes of that malady.

Anne Pinchin, aged 24, widow, was admitted into St. George's Hospital under my care, February 24th, of the present year. She had been ill four months, and her general appearance was that of great depression and exhaustion. The case in its progress presented the usual symptoms of jaundice in a very aggravated degree; it was very little influenced by the means employed for its relief, and

was remarkable principally for the severity of the pain complained of between the shoulders, along the track of the six or eight lower dorsal vertebræ. There was also occasional pain in the epigastrium and right hypochondrium,* both of which regions were carefully examined from time to time, without any information being thus obtained as to the immediate cause of the disease.

There was great dejection of mind, with entire loss of appetite and want of muscular power; the skin became more intensely coloured as the case advanced to its termination, and the saliva voided at this period of the disease stained the linen, on which it was received, of a deep yellow colour; there was also distinct evidence of the same tint in the menstrual flux, which occurred twice during the seven weeks that the patient passed in the Hospital. She died April 12, in a state of great general exhaustion, much aggravated by a mercurial salivation, following the administration of some small doses of calomel and opium.

The body was examined April 13th, twenty-four hours after death.

On removing the integuments, a stain of yellow was observed generally throughout the fat, and the exposed inner structures of the body. In the duodenal region, on raising the liver from the subjacent viscera, a large globular tumour was seen extending itself from behind the head of the pancreas upwards,

* The pain was very severe, and returned in paroxysms with marked intervals of suspension.

forwards, and outwards, to the right side of the body, in the direction of the ductus communis choledochus, so as to occupy the greater part of the space usually defined by the laminæ of the small omentum. The tumour was smooth on its surface, of firm texture, and was found to be the sac of an aneurism, situated in the trunk of the superior mesenteric artery, commencing about an inch from its origin, and extending itself in the directions I have mentioned.

The ductus communis was in close and prolonged contact with the walls of the sac, by which it was compressed in its whole extent: it was, however, pervious to the probe, and bile could readily be squeezed from its orifice into the duodenum.

The liver was of a dark livid tint, but was healthy in its general structure; its pori biliarii were universally enlarged and greatly distended with bile, so that the diameter of many of these vessels exceeded that of the larger gall ducts in ordinary cases. The gall-bladder contained a large quantity of healthy bile, with a few small gall-stones.

The quantity of bile circulating through the system, during the life of this patient, had been so unusually great, that we were anxious to avail ourselves of the opportunity afforded for observing the effect of such altered state of the blood in the tint of the several internal structures.

The heart was small; the membrane lining its cavities was uniformly yellow, and the same colour

was observed in some of the coagula which they contained.

In the lungs, which were otherwise healthy, there were many large distinct tubercles of a "mortary" consistence. These were throughout of a yellowish white colour.

In the head, the dura mater was universally yellow, but there was not the least tinge of this colour in the tunica arachnoidea, in the pia mater, or in the serous fluid effused between their surfaces. The substance of the brain, both vertical and medullary, was of the usual colour, but a thin yellow fluid was seen to exude, and could readily be squeezed from the divided orifices of many of the vessels in the medullary structure.

All the inner surfaces of the knee-joint were stained of a yellow colour. This was most remarkable in the fatty substance surrounding Havers's glands.

The synovial fluid contained in the cavity of the joint was uniformly yellow.

The cartilages presented their usual white appearance on their cut surfaces when divided in their substance.

The stomach contained much thick mucus of a yellow tinge, so that its contents had in this way been exposed to the contact of bile, separated by excretion from the general mass of blood in circulation.

Although the instance I have described of jaun-

dice depending on aneurism of a large branch of the aorta be a solitary one, yet, by the recollection of it, in protracted and intractable cases of the disease, we may be the more impressed with the necessity for making close and frequent examination of the upper region of the abdomen, by the *ear*, as well as by the eye and the hand, during the continuance of the symptoms.

It may likewise teach us caution in our estimate of the probable duration of cases of this disease, and in our conjectures as to the mode of their termination.

If jaundice be occasionally the effect, simple and direct, of pressure on the gall-ducts by an aneurism of a large branch of the abdominal aorta, then, in the treatment of cases classed under this name of jaundice, it will be well to remember that they may sometimes close with the awful suddenness of hæmorrhage from the main trunk of the circulation.

For such possible termination of a disease, chronic in its general character, and not usually considered as dangerous, the friends of the patient, in all cases warranting suspicion, should surely be prepared.

I am, moreover, willing to hope, that the relation of this case may tend to establish one caution the more against the mischievous routine of practice, now happily less frequent among reflecting physicians, of administering mercury in all cases of supposed "liver affection," and of jaundice, as included among such "affections."

Finding, in the case I have described, that no

improvement resulted from *other* plans of treatment, I was at length induced, against my better judgment, to prescribe small doses of calomel and opium, not with the view of promoting the further secretion of bile, (for of the presence of bile in the system there was abundant evidence in this, as in all cases of "yellow jaundice,") but in the hope of controlling the pain, which was at times excessive, and of inducing, according to the received notions of the action of mercury, some change for the better in the *general* habit of the patient. Salivation soon followed, with no effect but that of reducing still further an already exhausted frame. The mercury was immediately discontinued, but its harrassing effects remained until the death of the patient.

We find in this case a good illustration of the advantage to be obtained from dissection after death, in correcting the false analogies incidental to all systematic arrangements of disease, which are made to rest exclusively on the symptoms observed during the life of the patient. Had it not been for the anatomical opportunities afforded to us in the study of this case, it would have been registered, not as a rare variety of "aneurism," but as one of the many diseases classed under the common name of jaundice.

Thus, in the scheme of general medicine, "Pathology," so called, finds facts and sorts them. It creates no "system," nor should it be thus employed. The materials with which it works are substantial and abundant, but they are unequal to

the construction of more than its own share of the edifice.

It may not be obtruding too much on the attention of the Society, if I take this opportunity of placing on record another instance of the comparatively rare disease of aneurism of the trunk of the superior mesenteric artery, which likewise fell under my observation in the wards of St. George's Hospital.

Case II.—William Frost, a coachman, aged 42, of stout and rather fat habit of body, was admitted under my care in St. George's Hospital, on February 11th, 1835, complaining principally of a tumour pulsating in the epigastric region. It was of the size of a small orange, and, as he lay flat on his back, was observed to project rather to the left of the scrobiculus cordis. It was painful on pressure, and was moveable in nearly every direction, but most easily so towards the left side.

When the patient turned on this side, the tumour "fell at once under the ribs," and could no longer be felt.

On his turning to the *right* side, the tumour fell over in the same direction, and could still be distinctly felt in the front and to the right of the epigastric region.

Two or three months before his admission, he had suffered much from shortness of breath, with pain in the loins, and "between the shoulders," along the lower dorsal vertebræ. In a fortnight

after his admission, he became very costive, and was attacked by cough, with profuse hæmoptysis, for the first time since his illness. From this time until the death of the patient on July 10th in the same year, large quantities of blood were frequently brought up by cough, and latterly by vomiting. The blood drawn from the arm subsequently to these attacks, and for the relief of other symptoms, was always more or less cupped and buffed; the pulse was never irregular, and generally of moderate frequency. As the case advanced, the costiveness became obstinate, the appetite failed, the pain between the shoulders, along the lower dorsal vertebræ, became more severe, and there was much occasional suffering from cramps in the legs, with numbness and tingling in them, as in the arms and hands.

The tumour became more and more tender to the touch, and, some weeks before death, was observed to have changed its position from the *left* to the *right* side of the epigastrium.

Towards its close, the case presented many phthisical symptoms, and under these the patient gradually sank.

On examination after death, the aneurismal sac in this case, as in the other, was found to be situated in the trunk of the superior mesenteric artery. It is described in my own notes as large, kidney-shaped, extending *upwards*, *forwards*, and *outwards*, to the right side of the body, thus raising with it the

pancreas, which viscus lay on the upper boundary of the tumour.

The walls of the sac, especially in front, were firm and thick, and were enveloped by a transparent layer of peritoneum. The sac communicated directly with the aorta, by a long and wide opening with a smooth edge.

It contained many coagula; those next to the aorta were loose and black, in the front of the sac; they were very firm in texture, much laminated, and of a gray colour.

The larger branches of the superior mesenteric artery were distinctly recognized at the projecting end of the sac: they were open, and pervious to the blow-pipe, which passed readily, from them, through the loose coagula of the sac into the aorta.

The cæliac and superior mesenteric arteries were given off as usual from the aorta, and, with it, were healthy in their structure. The lungs were extensively diseased by vomicæ, and by tubercles of the common kind.*

It may be observed, that the two cases, which I have now described, of aneurism of the trunk of the superior mesenteric artery, do not present many symptoms in common: they were respectively distinguished during life, the one by jaundice, the other by vomiting of blood.

Both cases were remarkable for the severity and

* The preparations of both the cases described by the author are preserved in the Museum at St. George's Hospital, and were exhibited to the Society at the reading of the paper.

constancy of the pain in the *middle* of the back, referred by both patients to "between the shoulders."

The difference in the leading symptoms of the two cases to which I have alluded, finds its explanation in the difference of the situation of the aneurismal sac in relation to the pancreas, the liver, and the surrounding structures.

I have been the more induced to lay this second case of aneurism of the trunk of the superior mesenteric artery before the Society, as my late father, whose opportunities of dissection were most extensive, and whose careful accuracy of statement was undoubted, has declared, in his lectures delivered before the College of Surgeons, and published in 1819, that he had met with but one case of aneurism affecting any of the great branches of the abdominal aorta.

In the instance to which he refers, the left hepatic artery was the vessel diseased. The case had been attended by Sir Walter Farquhar, and it does not appear that the existence of aneurism had been suspected during life.

ON

CONGENITAL

TUMOURS OF THE PELVIS.

By EDWARD STANLEY, F.R.S.,

SURGEON TO ST. BARTHOLOMEW'S HOSPITAL.

READ JUNE 22ND, 1841.

There are various forms of congenital tumour attached to the pelvis, the discrimination of which becomes of much importance with reference to the question of their removal by operation. When it is recollected that in a case of this description, the question for decision may be whether the unnatural growth should be at once taken away, or allowed to remain with the probability of its increase to such a magnitude that the individual, in consequence of the unsightly appendage to his body, would be wholly withdrawn from society, any contributions to the accurate knowledge of this subject will probably be acceptable, and especially as the records in reference to it already made are not so complete as might be desired.

The following case occurred under my observation in the year 1836. I was requested to see a child, four months old, born with a soft pendulous tumour,

about the size of an orange, attached to the lower and back part of its body. In every other respect the child appeared to be perfectly formed and healthy. Mr. Bryan and Mr. Harding were the medical practitioners in attendance, to whom I am indebted for the opportunity of watching the progress of the case. With the growth of the child, the tumour progressively increased, and in proportion to the rest of its body; it continued to thrive well to the age of two years, when it was attacked by measles, with other children of the family, producing much constitutional derangement, under which it gradually sunk. At the time of its death, the following were the dimensions and general characters of the tumour: its circumference measured fourteen inches and a half; a line extending from its base to the most prominent point of its centre measured four inches and a half. The base being very broad, covered the whole of one buttock, and extended across the sacrum to the opposite side of the pelvis. The skin covering the tumour was natural; some large and tortuous veins were seen ramifying in the subjacent cellular tissue. Upon some parts of the tumour there were shallow grooves, which were supposed by many who examined the case to correspond with depressions between folds of intestine within the tumour. The surface of the tumour was generally soft, but in some situations, portions of a firm substance, resembling isolated pieces of cartilage, were recognised in it, and it was remarked that these points of resistance were not always to be felt in

the same situation. Pressure of the tumour did not cause a diminution of its size, so as to justify the belief that any portion of it receded into the body. A finger passed into the rectum discovered a portion of the tumour extending into the cavity of the pelvis by the side of the intestine. When the child cried loudly, the tumour became tense; this showed its communication with the interior of the body, and it was thought by some to indicate the probability of its communication with the spinal canal, in accordance with the views of Magendie, that there occurs a movement of the contents of the spinal canal in connection with respiration, and dependant on distension of the vessels of the cord and its membranes.

With every prospect of the child continuing to thrive, and with the observation of the progressive increase of the tumour in proportion to the growth of the body, the question of its removal became important, and it was difficult of decision, on account of which the case was seen at different periods by Sir Astley Cooper, Sir Benjamin Brodie, Mr. Thomas Blizard, and many other surgeons. Mr. Blizard was impressed with the idea of the removal of the tumour being practicable and safe, from the recollection of a similar case upon which he had operated with success, the history of which will be presently given. The objection to the operation was not so much from the magnitude of the tumour or from the circumstance of a portion of it extending into the pelvis, but chiefly from an

apprehension that it communicated with the spinal canal, although no circumstances had been observed which indicated such a connection; there was no defect of motion or sensation in the lower limbs, nor did pressure upon the tumour occasion such consequences as might have been apprehended if it had communicated with the spinal canal.

Permission having been obtained to examine the body of the child, a cast of the tumour was in the first place taken. Then, upon examining its interior, this was found to consist of an assemblage of different tissues. One portion of it was solid throughout, and closely resembling in its characters the ordinary fibrous tumour of the uterus. Another and larger portion consisted of two cysts, one enclosing the other; the sides of these cysts were membranous, and their texture dense and fibrous, each cyst containing a transparent yellow fluid. A narrow and solid portion of the tumour was found to extend through the inferior aperture of the pelvis upwards within its cavity, nearly to the top of the sacrum, chiefly occupying the right side of the pelvis, and in consequence compressing the bladder and rectum, not, however, apparently to the extent of materially interfering with their functions. There was no attachment of the tumour to the sacrum, otherwise than by loose cellular tissue. The sacral canal was completely closed, and accordingly had no communication with the tumour. The information derived from the examination of the extent and connections of the tumour appeared

to confirm the opinion that its removal might have been safely undertaken in an early stage, when, from the smaller extent of the tumour, it might have been practicable to draw downwards the portion of it from within the pelvis, as it had no other connections with the surrounding organs than by loose cellular tissue.*

The following is the history of the case upon which a successful operation was performed by Mr. Blizard, as it was drawn out by himself:—

"A female child, about two years of age, was brought to me by its mother, with a tumour attached broadly to the sacrum, and thence extending nearly to its feet. A careful examination, both externally and internally, by introducing the finger into the rectum, led to the conclusion, that the tumour had no communication with the internal cavities or spinal canal, and that its removal might be safely accomplished. Attention was paid in the division and separation of the skin, to leave what would be sufficient to cover the wound, and admit of union by a simple line. In the course of the removal of the integuments from the tumour, there presented what appeared to be a portion of intestine of a dark colour, owing to its contents, which, when afterwards examined, had the closest resemblance to meconium. This occurrence caused for an instant much anxiety, but the careful examina-

* The preparation is contained in the Museum of St. Bartholomew's. For the representation of it see Plate V.

tion with a finger in the rectum afforded the conviction that the tumour had no communication with the abdominal or pelvic cavity, and accordingly the operation was proceeded with and finished. The divided parts were accurately brought together, and united by the first intention. In a fortnight the child had quite recovered from the operation, and was now able to walk, which it had not before done, in consequence of the weight and position of the tumour. Many years afterwards I had the opportunity of ascertaining from the mother that her daughter grew up a fine girl, living to the age of thirteen, when she died of consumption."

Healthy skin covers the tumour; its form is oblong, its length is seven inches; its circumference at its broadest part eleven inches; its lower end is rounded, and the skin is here divided by fissures into separate portions, which were supposed to be the rudiments of fingers or toes. Within the upper part of the tumour, immediately beneath the skin, and so near its attachment to the body of the child as to be included in the incision for its removal, was the portion of intestine of which mention has been made in the foregoing history; its length is three inches and a half, its external characters are those of a portion of large intestine with an appendix vermiformis continued from it, perfectly formed, and in size corresponding with the large intestine and appendix of a fœtus at its full period. The inner surface of the intestine presents folds arranged regularly and in a longitudinal direc-

tion. At one extremity the intestine is closed, and by its rounded form resembles the cæcum, and it is from this part that the narrower process resembling an appendix vermiformis is continued. At its opposite extremity, it is to be presumed that the intestine was also closed before the incision was made into it in the removal of the tumour. On its outer surface the intestine had a close cellular connection with a surrounding solid substance, of which the rest of the tumour consists. This substance is divided into separate portions, circumscribed and of a globular form, one the size of an orange, and others of smaller dimensions, and consisting throughout of a dense fibrous texture. In the cellular tissue uniting these fibrous tumours, was found a portion of bone, about the size of an adult os lacrymale, but presenting no resemblance of form to any bone in the skeleton.*

In the eighth volume of the work intituled Medical Facts and Observations, a case of congenital tumour of the pelvis, analogous to the foregoing, is recorded by Mr. W. Simmons, Surgeon to the Manchester Infirmary. The child lived to the age of two years, when the surface of the tumour became ulcerated, and discharged an ichorous fluid, attended with irritation, which was fatal. In the examination of the tumour, its principal attachment was found to be by a ligamentous substance extending to the os coccygis of the child. The tu-

* The tumour is deposited in the Museum of the Royal College of Surgeons. The examination of it was made by Mr. Clift, whose drawings of it were exhibited to the Society.

mour consisted of a mass of fat, containing in its centre a closed intestine, more than a foot in length, and filled by a fluid resembling meconium. There were also found dispersed through the tumour, several processes of bone, some resembling tibiæ, others the bones of the hand and foot, and there were some unlike any part of a perfect skeleton.

Professor Clarke of Cambridge has furnished me the following particulars of a case of congenital tumour of the pelvis, of which he made the examination. "About five years ago the subject of the tumour, a girl aged ten months, was brought to Addenbrooke's Hospital, in the hope that it might be removed. She had good health, was well nourished, and possessed the free use of her legs. After a short residence in the hospital, during which nothing was done, a small ulcerated portion of the surface of the swelling gave way whilst the nurse was dressing the child. A vast quantity of water escaped, and death suddenly ensued. The case was believed by most who saw it to be spina bifida. The tumour occupied the sacral and the two glutæal regions, descending as a large spherical mass as low as half way down the thighs. The fluid which escaped from it was limpid and colourless; it was not tested. I had some doubts of this being a case of ordinary spina bifida, from the large size of the base of the tumour. This was not constricted as though it communicated with the spinal canal by a moderate opening. The sac which contained the fluid was formed of skin, subcutaneous tissue, the glutæi

maximi distended so as to form a thin muscular expansion, and an albuminous membrane innermost. This latter membrane was continued into the cavity of the pelvis, through the great sacro-ischiatic foramina, and there it appeared to be reflected over a tumour as large as a swan's egg, situated, as it seemed, upon the anterior surface of the sacrum, but which really communicated by its root, with the cavity of the spinal canal. Beyond this, the opportunity was not afforded of continuing the examination."

The size, form, and situation of the tumour are shown in the annexed engraving.

There is a specimen of congenital tumour of the pelvis in the Museum of St. Bartholomew's, which differs in its characters from those already described; it was obtained, and the examination of it made by Mr. Wormald. The child was born at the full period, alive, with a tumour as large as two closed hands, attached to the lower and posterior part of its body. In the progress of the child through the inferior aperture of the pelvis, the tumour burst, and discharged a large quantity of sanguineous fluid. Directly the child was born, it cried loudly, and moved its limbs freely, but its cries and its movements became gradually feeble, its skin at the same time becoming pale, from which it was conjectured to be dying from internal hæmorrhage; it lived but two hours. The tumour was found to consist of one large cyst, with smaller cysts attached to its internal surface. Within the large cyst there was found some coagulated blood; the smaller cysts contained a serous fluid. The sides of the large cyst are composed of a thin smooth membrane, covered by healthy skin, and firmly attached above to the bones constituting the boundaries of the inferior aperture of the pelvis. The coccyx and lower end of the sacrum project into the cyst, and there is a portion of the same cyst continued upwards within the pelvis between the anterior surface of the sacrum and the rectum. The anterior sacral holes communicate with this portion of the cyst, and some filaments of the sacral nerves are continued from these holes to the inside of the cyst, where they are distributed. Through

the sacral holes, the cyst communicates with the cellular tissue on the outside of the theca vertebralis, between this and the surrounding bony walls of the spinal canal, but it has no communication with the interior of the theca; this is completely closed.

It appears unnecessary to furnish additional cases and references, as the foregoing series is sufficient for the object of illustrating the principal circumstances in the history of these congenital tumours of the pelvis. The varieties in their nature permit them to be arranged in four classes.

First. The cases wherein the tumour is composed wholly of morbid structures, which, although formed during fœtal life, have no peculiar character, the solid tissues mostly resembling the ordinary fibrous tumours of the uterus, and the membranous cysts being analogous in their nature and contents to the corresponding anormal structures formed at other periods of life.

Secondly. The cases wherein the tumour is composed of morbid structures in conjunction with isolated portions of perfectly-formed animal organs, having no other relation to the living being with which they are connected, than as they are dependent upon it for the means of nutrition and growth. These cases must be considered to belong to the class of parasitic monsters, constituting intra-fœtation, the inclusion of one fœtus within another, and, in accordance with the present theories on this subject, supposed to result from the cohesion or intus-susception of germs, when more than one ovulum is contained

in the same vesicle, under which circumstances there will arise either the union of two perfect fœtuses, as in the instance of the Siamese twins, or the growth of one fœtus to its perfect form, with but the portion of another fœtus attached to it, as in the remarkable case recorded by Velpeau, where a tumour which was removed from the scrotum of an adult was found to consist of several bones, with other distinct parts of a fœtus.*

Thirdly. The cases wherein the tumour, being of the nature of spina bifida, consists of a membranous cyst, communicating with the interior of the theca vertebralis.

Fourthly. The cases wherein the tumour is composed either wholly, or in part, of membranous cysts, communicating with the spinal canal, but exteriorly to the theca; thus in one of the cases related, a probe passed from the cyst, of which the tumour in part consisted, through one of the anterior sacral holes into the cellular tissue between the theca of the cord and the bony walls of the canal.

It will be observed, that in all the cases noticed in this paper, the congenital tumour projected from the posterior and inferior part of the pelvis; its situation, consequently, was such as to allow of removal by operation but from the apprehension that there might be some deeper portion of it extending to the interior of the pelvis, and more especially from the apprehension that the tumour might be of the nature of spina bifida, and accordingly that its interior would be found to be continuous with the membranes of the spinal cord.

* Gazette Medicale, February 1840.

We learn from the foregoing histories that the general character of these congenital tumours, whatever may be their nature, is to increase progressively, and in proportion to the rest of the body; hence arises the important question of their removal: and it must be added, that this question will in general be extremely difficult of decision, for the reason that no outward mark or symptom can be referred to as distinguishing the tumour composed wholly of morbid products, and having no other connection with the body of the child than by cellular tissue, from the tumour which, by the continuity of its interior with the membranes of the spinal cord, is of the nature of spina bifida; yet the operation of removal, in one case accomplished with a fair prospect of success, would, in the other, be certainly fatal. And, accordingly, it has happened in one of these cases, that an operation commenced with the expectation of a successful result, has been stopped in its progress by the discovery of a pedicle extending from the tumour to the interior of the spinal canal. Mobility of the congenital tumour does but indicate the probability of its having no connection with the vertebral canal, as the means of this connection may be a narrow pedicle, permitting free movement of the tumour upon the walls of the pelvis. Also to the existence of a narrow pedicle and a small opening of communication with the vertebral canal, we may refer for explanation of the frequently observed fact of pressure of the tumour causing no portion of its contents to recede into the

canal, and thus occasioning symptoms of compression of the spinal cord or brain. Any derangement of the nervous functions in the lower limbs would of course be evidence of the probability of the connection of the tumour with the spinal cord; but it must be recollected that the instances are not infrequent of spina bifida co-existing with a perfect integrity of function in the spinal cord and its nerves.

A circumstance of physiological interest will be noticed in two of the foregoing cases, namely, the existence of a fluid in the isolated portion of intestine within the parasitic monster, which in colour and other obvious characters closely resembled meconium, although there existed no liver or other distinct hepatic apparatus which could have furnished the colouring matter of this fluid, and there was certainly no communication between this portion of intestine and the intestinal canal of the child to which the parasitic monster was attached. An analogous fact occurred to my observation, many years ago, in the examination of an acephalous lamb, in which, with perfectly-formed stomach, intestines, spleen and kidnies, the liver was wholly wanting, and yet within the intestines, especially the large, there was found a considerable quantity of a dark yellow and thick fluid, not to be distinguished by its appearance from meconium. When diluted, the colour of this fluid was exactly that of healthy bile, but it was not bitter to the taste, and in this respect it differed from the perfect meconium of the human fœtus, which imparts to the tip of the tongue the peculiar bitter flavour of bile.

DONATIONS

TO THE

ROYAL MEDICAL AND CHIRURGICAL SOCIETY,

1840-41.

*** Those works which have been presented by their respective authors are distinguished by an Asterisk.

Ashburner, Dr.

Dictionarum Medicum, 12mo. 1564.

Ashwell, Samuel, M.D.

* A Practical Treatise on the Diseases peculiar to Women, 8vo. Part I. 1840.

Arnold, W., M.D.

A Practical Treatise on the Bilious Remittent Fever, its Causes and Effects; with illustrative Tables and Cases on the Temperature of the System in the Febrile Diseases of Jamaica; to which is added, Medical Topography of the different Military Stations in that important Colony, 8vo. London, 1840.

Baillière, M.

The Anatomy of the Nerves of the Uterus, by Robert Lee, M.D., with 2 Plates, folio. London, 1841.

Elements of Medicine, vol. ii., on Morbid Poisons, by Robert Williams, M.D., 8vo. London, 1841.

Billing, Archibald, M.D.

* First Principles of Medicine, 8vo., 4th edition. London, 1841.

Clark, Sir James, Bart., M.D., F.R.S.

* The Sanative Influence of Climate, with an Account of the Best Places of Resort for Invalids in England, the South of Europe, &c., 8vo., third edition. London, 1841.

Cooper, Daniel, Esq. (Editor.)

The Microscopic Journal and Monthly Record of Facts in Microscopical Science, &c., 8vo. London, 1841.

Coulson, William, Esq.

* On Diseases of the Hip-Joint, with Observations on Affections of the Joints in the Puerperal State, with Plates, second edition, with alterations and additions, 1 vol., 8vo. London, 1841.

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* Catalogue of the Scientific Books in the Library of the Royal Society, 1 vol., 8vo. London, 1839.

Cox, J. C., M.D.

* On the Climate of Naples, 8vo. London, 1841.

Davis, David D., M.D.

* Acute Hydrocephalus, an Inflammatory Disease, and Curable equally and by the same means with other Diseases of Inflammation, 8vo. London, 1840.

Duffin, Edward W., Esq.

* Practical Remarks on the New Operation for the Cure of Strabismus, or Squinting, 8vo. London, 1840.

Earle, Pliny, M.D.

* A visit to Thirteen Asylums for the Insane in Europe; to which are added a brief notice of similar Institutions in Transatlantic Countries and in the United States, and Essay on the Causes, Duration, Termination, and Moral Treatment of Insanity, with Copious Statistics, 8vo. Philadelphia, 1841.

GREEN, JOSEPH HENRY, Esq., F.R.S.

* The Touchstone of Medical Reform, addressed to Sir R. Harry Inglis, Bart., M.P., 8vo. London, 1841.

HALL, MARSHALL, M.D., F.R.S. L. and ED.

* On the Diseases and Derangements of the Nervous System, 8vo. London, 1841.

Nieuwe Bijtragen, tot de Physiologie der Zenuwen door Van Deen, 1 vol., 8vo. Leiden, 1838.

* Briefe über das Nervensystem an Professor J. Müller. Erster Brief.

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* Traité sur les maladies puerperales suivi de recherches sur l'auscultation des femmes enceintes, 8vo. Paris, 1840.

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* Die Heilung der Krankheiten mit Hulfe des Kreuzbrunnen zu Marienbad, 12mo. Prag. 1840.

HOWARD, RICHARD BARON, M.D.

* An Enquiry into the Morbid Effects of Deficiency of Food, 8vo. London, 1839.

JOHNSON, JAMES, M.D.

* Pilgrimages to the Spas, &c., 8vo. London, 1841.

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* A Treatise on Diseases of the Eye, 8vo., second edition. London, 1841.

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* A Treatise on the Nervous Diseases of Women, comprising an Enquiry into the Nature, Causes and Treatment of Spinal and Hysterical Disorders, 8vo. London, 1840.

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the Army Medical Museum at Chatham, folio. London, 1841.

Middlemore, Richard, Esq.

* Report of the Cases attended at the Birmingham Eye Infirmary, during the years 1838-9, 8vo. London, 1841.

Perry, John G., Esq.

Report from the Select Committee on Anatomy, folio.

Provincial Medical and Surgical Association.

The Transactions of the Provincial Medical and Surgical Association, vol. ix., 8vo. London, 1841.

Quain, Richard, Esq.

* The Anatomy of the Arteries of the Human Body, with its Applications to Pathology and Operative Surgery, in Lithographic Drawings, with Practical Commentaries. The Delineations by Joseph Maclise, Esq. Parts I. and II., folio. Parts I. and II., 8vo. London, 1840.

Schoenfeld, Martin.

* Recherches sur l'Osteo-Myelite Cervicale, 8vo. Gand. 1841.

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* On a New Operation for the Cure of Lateral Curvature of the Spine, &c., 8vo. London, 1841.

* A Practical Treatise on the Venereal Disease, founded on Six Lectures on that subject, 8vo. London, 1841.

Stevens, Robert, Esq.

* A new Synopsis, or the Natural Order of Diseases, containing their Definition, Principles, and Treatment, with a new Pathology of Fever and Inflammation, 8vo. London, 1841.

Stratton, T., Esq.

* Illustrations of the affinity of the Latin Language to

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Streeter, J. S., Esq.

* Practical Observations on Abortion, with Plates and Wood-cuts, 1 vol., 8vo. London, 1840.

Thomson, William, M.D.

* A Practical Treatise on the Diseases of the Liver and Biliary Passages, 8vo. Edinburgh, 1841.

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Statistics of the Retreat near York, from its establishment in 1796 to 1840.

Tuson, E. W., Esq., F.R.S.

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Vivenot, Dr. Rudolph Edlen Von.

* Andentungen uber Gastein und dessen Anstalten zu Wildbad und Hofgastein, 8vo. Wien. 1839.

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* Practical Observations on the Pathology and Treatment of Stricture of the Urethra, with cases, 8vo. London, 1841.

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* A Treatise on Pyrosis Idiopathica, or Water Brash, &c., 8vo. London, 1841.

Williams, Charles J. B., M.D.

* The Pathology and Diagnosis of Diseases of the Chest, comprising a Rational Exposition of their Physical Signs, with an Appendix containing

Various Opinions and Experiments on the Motions and Sounds of the Heart, and on the Bronchi, fourth edition, 8vo. London, 1841.

Fig. 5.

Fig. 4.

Fig. 3.

Fig. 6.

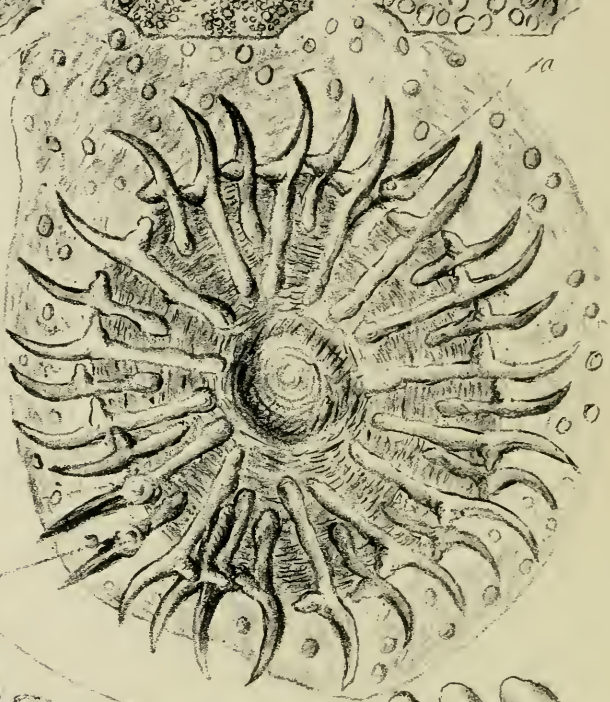


Fig. 9.

Fig. 10.

Fig. 8

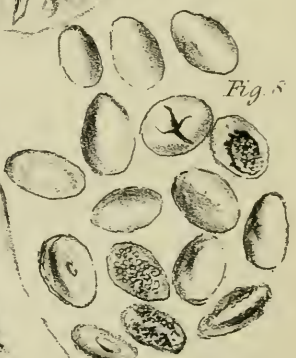
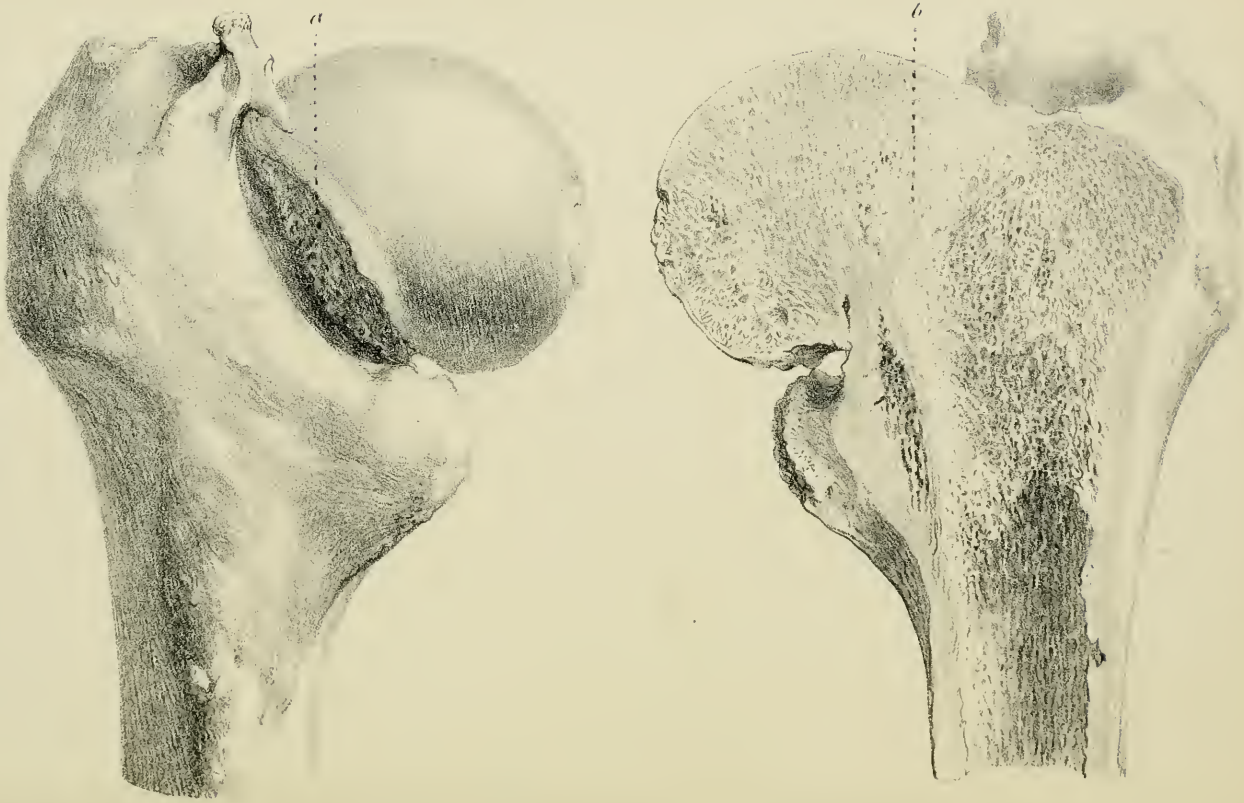
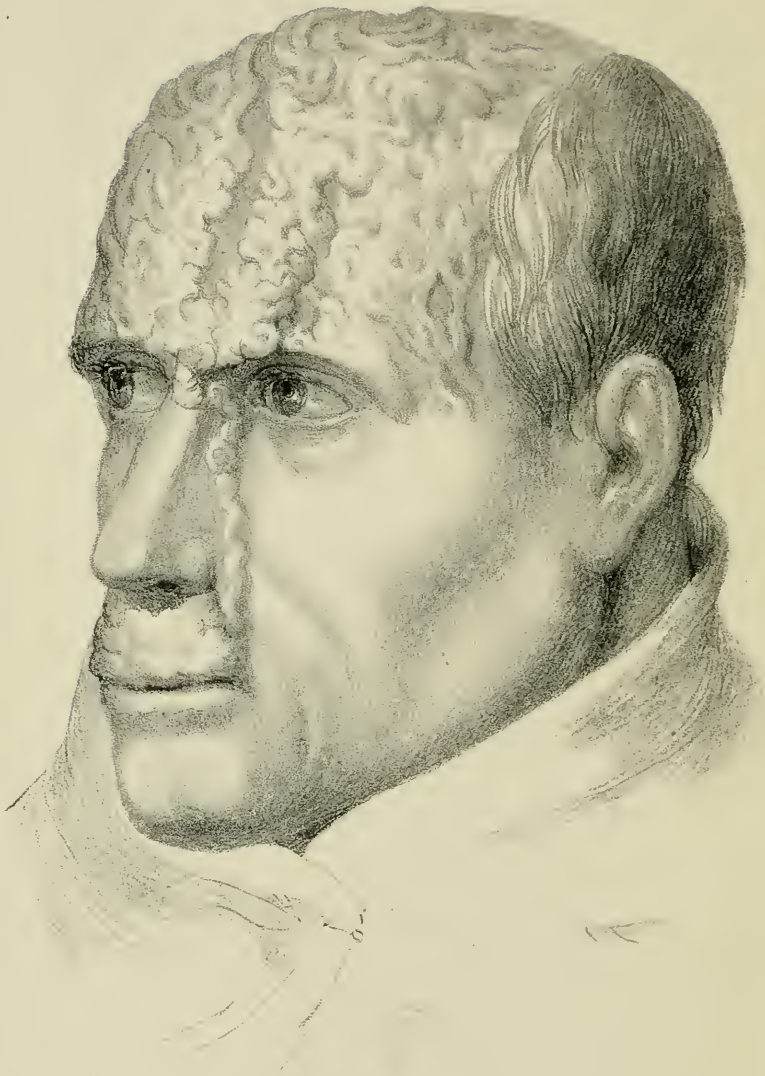


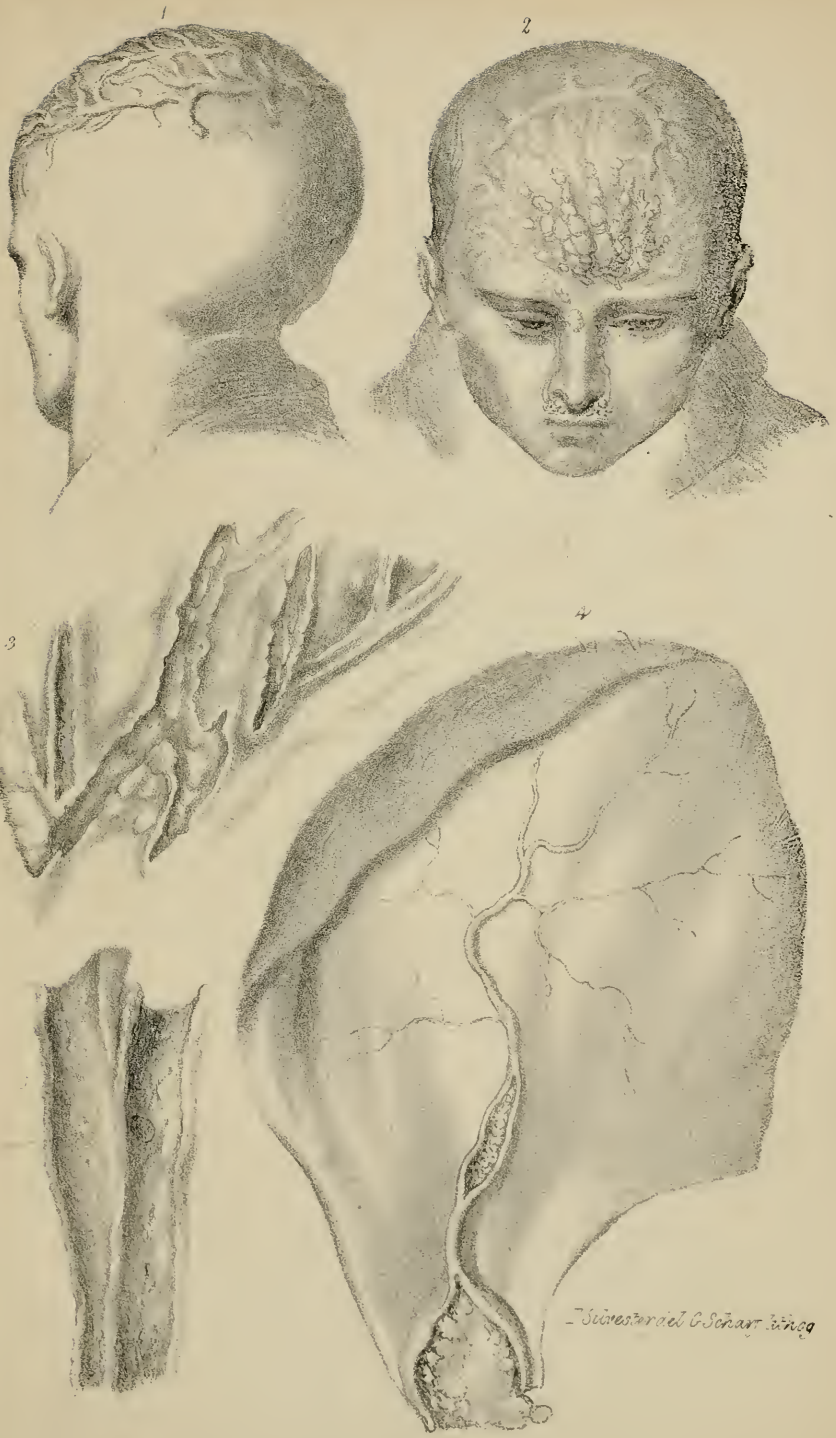
Fig. 7.

Fig. 2.
Fig. 1



Drawing from Nature by G. Schaff

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J. Silvestre del. C. Schaar lith.

EXPLANATION OF THE PLATES.

PLATE I.

Referred to in Mr. Gulliver's paper on the Structure of the Entozoa of the Genus Cysticercus at page 1. A detailed description of the figures is appended to the paper.

PLATE II.

Illustrates Mr. Jones's Case of Osseous Union of Fracture of the Neck of the Thigh-bone within the Capsule, page 12.

PLATE III.

Referred to in Dr. Silvester's paper on Phlebitis, page 36.

Fig. 1.—The vessels distended with pus, and the mode of their termination in blunt extremities seen.

Fig. 2.—The disease in its last stage of incrustation; the marks of those vessels which had undergone the process of reparation are seen about the temporal regions, and one large vessel, which remained to the last filled with pus, traverses conspicuously the vertex.

Fig. 3.—Crumbling fibrinous masses, found after death in the veins, which are here exhibited torn open.

Fig. 4.—One of the temporal veins in the interior of the scalp slit open in two different places, the lower one forming a *foyer* filled with pus.

Fig. 5.—The roughened internal surface of the veins deprived of their glistening lining.

Fig. 6.—The disease at its acme.

PLATE IV.

Referred to in Mr. Stanley's paper on Dislocations, at page 123.

Fig. 1.—The representation of a hip-joint, in which, with an elongation of the capsule, the ligamentum teres has disappeared. Small fringe-like membranous processes have arisen from the internal surface of the elongated capsule, and there has been some absorption of the articular cartilage and osseous texture of the head of the bone.

Fig. 1.

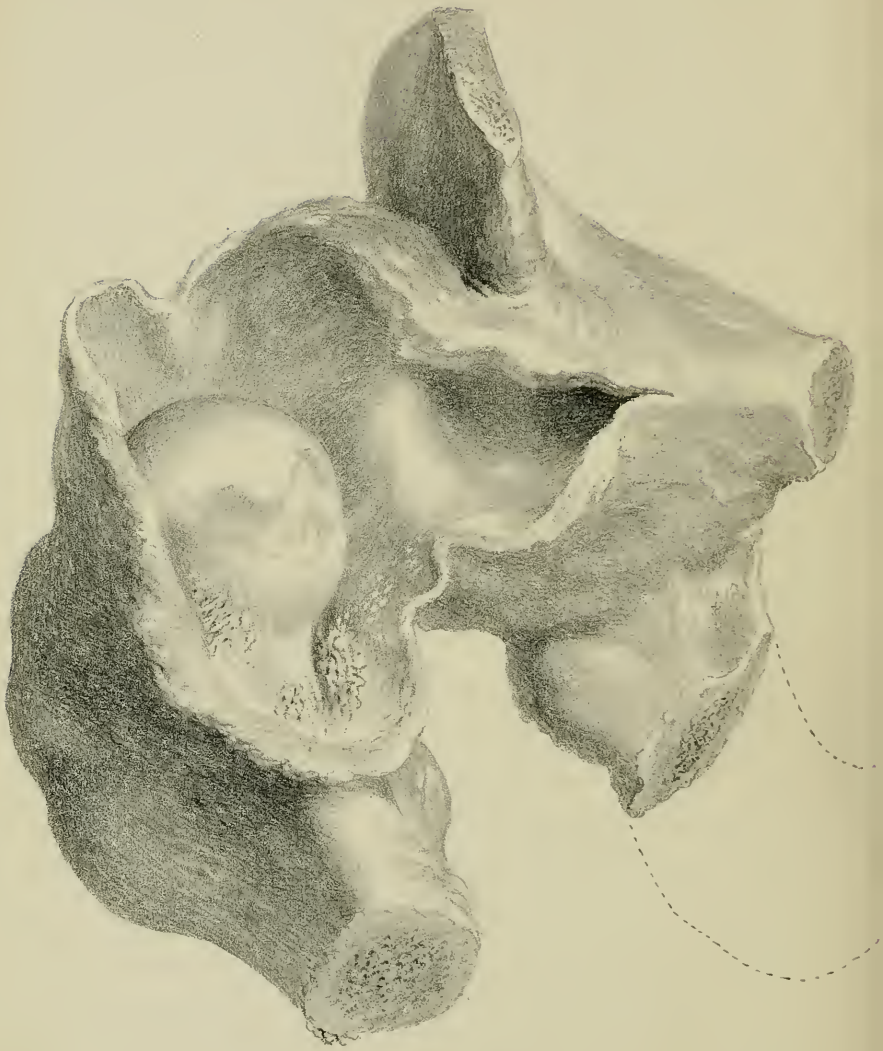

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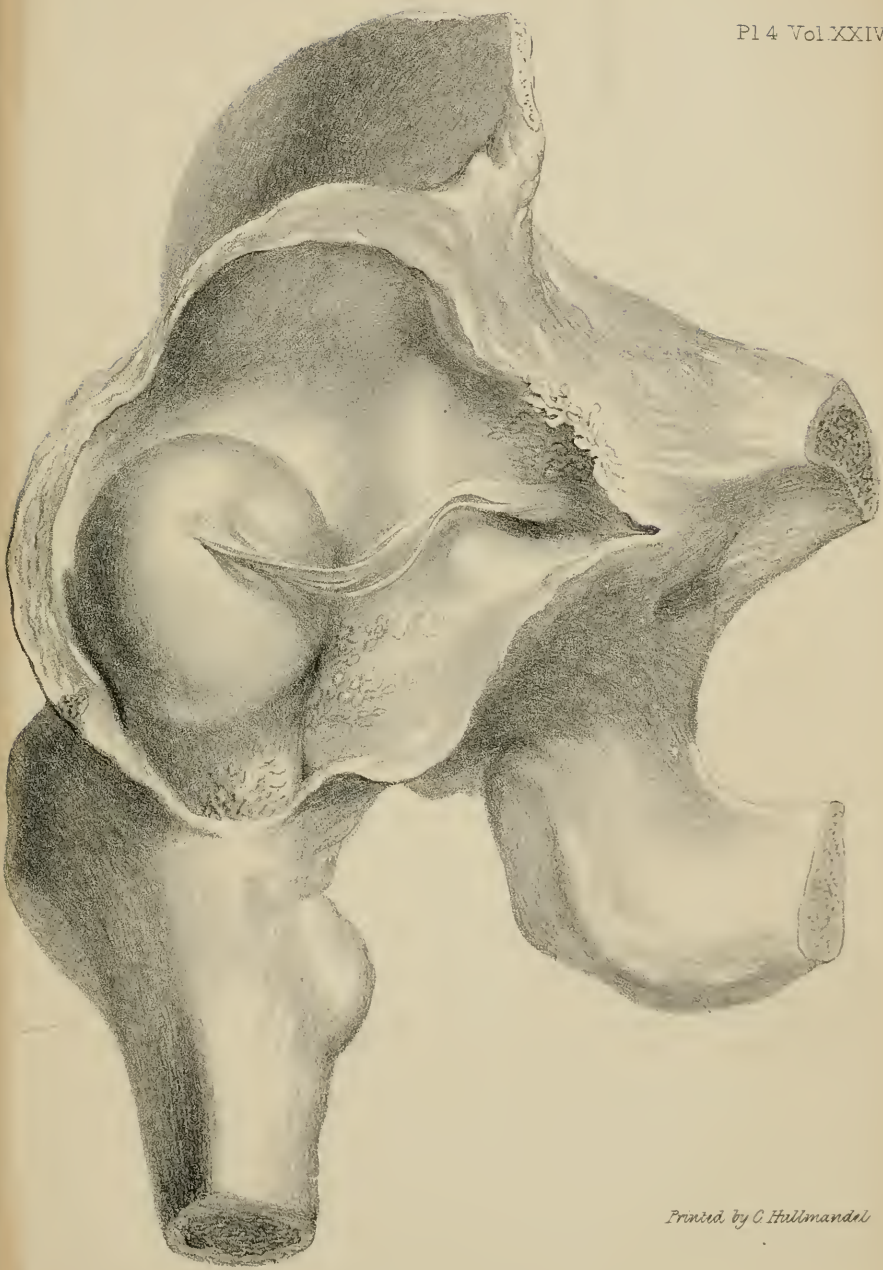
Fig 2.



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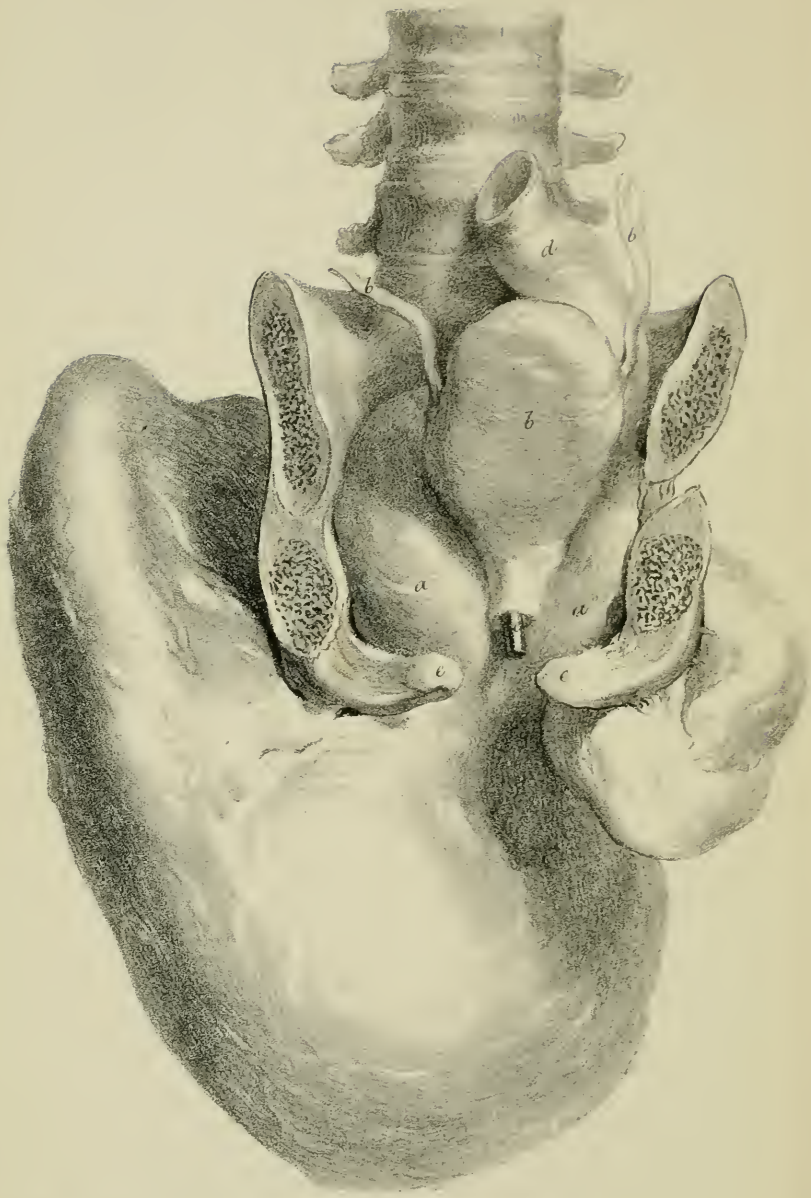

Drawn from Nature by G. Scharf

Fig. 2.—The representation of a hip-joint in which there is an elongation of the capsule, and with it of the ligamentum teres; this is also split into three cords through its entire length. Fringe-like membranous processes have arisen from the internal surface of the capsule.

The preparations of these hip-joints are contained in the Museum of St. Bartholomew's Hospital.

PLATE V.

Representation of a Congenital Tumour of the Pelvis, the first in the series of cases described by Mr. Stanley in his paper on this subject, at page 231.

a a—A portion of the tumour extending into the cavity of the pelvis.

b b b—The bladder and ureters.

c—A portion of glass introduced into the urethra.

d—The rectum.

e e—The ossa pubis, which were found thus widely separated from each other.

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